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DEPARTMENT OF THE INTERIOR
U. S. GEOGRAPHICAL AND GEOLOGICAL SURVEY OF THE ROCKY MOUNTAIN REGION
J. W. POWELL IN CHARGE

A STUDY

OF THE

MANUSCRIPT TROANO

BY

CYRUS THOMAS PH. D.

WITH AN

INTRODUCTION BY D. G. BRINTON M. D.

[FROM "CONTRIBUTIONS TO NORTH AMERICAN ETHNOLOGY" VOL. V]

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PREFACE

I am fully aware that this paper bears the marks of haste and gives evidence of the fact that a number of the more important points are not worked out as thoroughly and completely as they might have been had more time been devoted to them. But the growing interest in the public mind in reference to all that relates to the past history of our continent has induced me to present it in its present incomplete form rather than defer its publication to an indefinite period in the future. It is therefore offered to the public more as a tentative work than with the expectation that all my conclusions will stand the test of criticism.

I have endeavored, as will be seen by an examination of its contents, to confine my studies as strictly as possible to the Manuscript itself, without being influenced in my conclusions by the conclusions of others—using Landa's "*Relacion*," Perez's "*Cronologia*," Brasseur's works, and the Dresden Codex as my chief aids; not intending by any means to ignore the valuable work done by others in the same field, but that I might remain as free as possible to work out results in my own line of thought.

I may also add that at the time the main portion of the paper was written I was in the West, out of reach of any extensive library containing works relating to the history, antiquities, &c, of Mexico and Central America. This fact I mention as an apology for the comparatively few works referred to in the paper.

I have studied the Manuscript somewhat in the same way the child undertakes to solve an illustrated rebus, assuming as a standpoint the status of the semi-civilized Indian, and endeavoring, as far as possible, to proceed upon the same plane of thought. In other words, I have not proceeded upon the assumption that the pre-Columbian Indians of Yucatan were learned phi-

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losophers, thoroughly versed in science and general knowledge, but were *Indians*, who through some influence, whether introduced or indigenous, had made considerable advance in certain lines of art and science. But these lines, as I believe, were few and limited, relating chiefly to architecture, sculpture, painting, and the computation of time.

As an examination of the Manuscript soon satisfied me that it was, to a great extent, a kind of religious calendar, I found it necessary first to discuss the Maya chronological system in order to make use of the numerous dates found in the work—a fact that will explain why so many pages of the first part of the paper are devoted to this subject.

The results of my investigations are summed up at the close of this preface. I find the work consists of two parts: first, a calendar giving the dates of religious festivals running through a long period of time, in all probability a grand cycle of three hundred and twelve years, together with brief formulas; second, an illustration of the habits, customs, and employments of the people. But these two subjects are mingled together throughout the Manuscript; the first including most of the characters or hieroglyphics around the spaces; the second the figures in the spaces.

One omission in my paper will be observed by those who are familiar with the subject, that is, the failure on my part to notice and account for, in the Maya chronological system, the surplus days of the bissextile years. This omission on my part has been intentional. I can find no plan by which to insert them in the series, numbering them as the others, without interfering with that order which is essential to the system itself. I have therefore proceeded upon the assumption that they are added as uncounted days, and hence interfere in no way with the regular order. If I am mistaken in this conclusion, considerable modification in my tabular arrangement of the years may be necessary, even though the general plan be correct.

A very serious drawback to the attempt to explain the written characters or hieroglyphics has been the lack on my part of a knowledge of the Maya language. Such a knowledge I do not claim; therefore, in this part of the work, the best I could do was to quote from the lexicons, as there given, such words as I found it necessary to refer to. The propriety of attempting anything in this direction without this knowledge may be justly

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questioned. But after seriously considering this point, I concluded it best to give to the world the result of my investigations with these explanations, as I felt confident I had made some progress in deciphering this mysterious Manuscript.

I take this opportunity of acknowledging the obligations I am under to Dr. D. G. Brinton, of Philadelphia, for the valuable notice of the Maya Manuscripts which he has contributed as an introduction to my paper.

RESULTS OF MY INVESTIGATIONS OF THE MANUSCRIPT TROANO.

These may be briefly summed up as follows:

1st. That the work was intended chiefly as a ritual or religious calendar to guide the priests in the observance of religious festivals, and their numerous ceremonies and other duties. That the very large number of day columns and numerals, which form fully one-half of what may be called the written portion, are simply dates which appear to run through one entire grand cycle of 312 years, fixing the time when festivals should be held and other religious observances take place. Also that much of the text proper—the portion in hieroglyphics or written characters—is purely ritualistic, consisting of very simple formulas.

2d. That the figures in the spaces are in some cases symbolical, in others simple pictographs, and, in quite a number, refer to religious ceremonies, but that in many instances they relate to the habits, customs, and occupations of the people—as, for example, their method of capturing game, which, as appears from this work, was as stated by Herrera, chiefly by "gins and traps"—and the incidents of the chase; that which relates to the business of the apiarists; making ropes; the manufacture of idols; agricultural pursuits; occupation and duties of the females, &c. But even here we see the religious element pervading everything.

3d. That the work appertained to and was prepared for a people living in the interior of the country, away from the sea-shore. This is inferred from the fact that nothing is found in it relating to fishermen, or their vessels.

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But there are reasons for believing that it pertained to a comparatively well-wooded section.

4th. That the people of the section where it was prepared were peaceable, not addicted to war; and were sedentary, supporting themselves chiefly by agricultural products, though relying upon their "gins and traps" and the chase to supply them with animal food. Twelve of the plates (VIII to XIX) are devoted to this latter subject; ten (I* to X*) to the business, festivals, &c., of the apiarists and honey-gatherers; and ten (XXIV to XXXIII) to rains, storms, and agricultural pursuits.

The execution and character of the work itself, as well as its contents, bear testimony to the fact that the people were comparatively well advanced in the arts of civilized life. But there is nothing here to warrant the glowing descriptions of their art and refinement given by some of the earlier as well as more modern writers, nor even to correspond with what might be inferred from the architectural remains in some parts of Yucatan. We find in the work indications of stone and wooden houses, but generally with thatched roofs; at least they always have wooden supports, and are of a temporary character.

The dress of the males appears to have consisted of a strip of cloth (probably cotton), passed once or twice around the loins, with one end hanging down behind and the other in front, or a small flap in front and the ends behind. That of the females consisted of a skirt fastened at the waist and hanging down to the ankles. A kind of broad anklets and wristlets appear also to have been quite common with the better class, but the feet were always bare. The women parted their hair in the middle, that of the matrons or married women not being allowed to hang down, while that of the younger or unmarried ones was allowed to hang in long locks behind.

Mats alone seem to have been used as seats.

The pottery, so far as I can judge by what is shown in the Manuscript (and in this prefatory statement I confine my remarks strictly to what seems to be shown here, unless otherwise expressly stated), was of an inferior grade as to form and decoration, but it is worthy of notice that pots with legs were common. Some censers in the form of a snake's neck and head are the best specimens represented.

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In planting their corn (maize) it was dibbled in with a curved stick, five grains to a hill being the established number. While at this work they wore a peculiar head-covering, apparently a kind of matting. The other cultivated plants noticed in the work appear to be cacao, cotton, and a leguminous species, probably a climbing bean, as it is supported by a stake.

I judge, from a number of the figures, that their corn while growing was subject to the attacks of numerous insects (represented as worms or snakes), which ate foliage, ear, and root, and was frequently injured by severe storms, and also that the planted grains were pulled up by birds and a small quadruped. Their crops were also subject to injury by severe droughts, accompanied by great heat.

The production of honey seems to have been a very important industry in the section to which the work relates, but so far I have succeeded in interpreting but few of the figures which refer to it

Rope-making (or possibly weaving) is represented on Plate XI*—a very simple process, which will be found described in my paper.

Their chief mechanical work, as I judge from this Manuscript, was the manufacture of idols, some being made of clay and others carved of wood Two implements used in making their wooden images appear, from the figures, to have been of metal, one a hatchet, the other sharp-pointed and shaped much like a pair of shears.

Spears and arrows (if such they be, for there is no figure of a bow in the entire work), or darts, are the only implements of warfare shown. The spears or darts seem to have been often thrown by means of a kind of hook, and guided by a piece of wood with a notch at the end.

5th. The taking of life, apparently of a slave, is indicated in one place, but whether as a sacrificial offering is uncertain. It is evidently not in the manner described by the early writers, as in this case it is by decapitation with a machete or hatchet, the arms being bound behind the back, and what is presumed to be a yoke fixed on the back of the head. This is the only thing in the Manuscript, except holding captives by the hair, as in the Mexican Codices, which can possibly be construed to indicate human sacrifice. In the Dresden Codex human sacrifice in the usual way—by opening the breast—is clearly indicated.

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6th. We learn from the figures in the Manuscript that the cross in some of its forms was in use among this people as a religious emblem, and also that the bird was in some cases brought into connection with it, as at Palenque.

7th. In regard to the written characters I have reached the following conclusions:

That, although the movement of the figures is from the right to the left, and the plates should be taken in this way, at least by pairs, yet, as a general rule, the characters are in columns, to be read from the top downwards, columns following each other from left to right; that when they are in lines they are to be read from left to right and by lines from the top downwards, but that lines are used only where it is not convenient to place the characters in columns. The correctness of this conclusion is, I think, susceptible of demonstration by what is found in the Manuscript.

8th. That there is no fixed rule in reference to the arrangement of the parts of compound characters. The few which I have been able to decipher satisfactorily appear to have the parts generally arranged in an order nearly or quite the reverse of that in which the characters themselves are placed.

9th. That the characters, while to a certain extent phonetic, are not true alphabetic signs, but syllabic. Nor will even this definition hold true of them all, as some appear to be ideographic and others simply abbreviated pictorial representations. Most of the characters are compound, and the parts more or less abbreviated, and, as the writing is certainly the work of the priests, we may correctly term it hieratic.

Landa's alphabet, I think, is the result of an attempt on his part to pick out of the compound characters their simple elements, which he erroneously supposed represented letters. The day characters are found in the Manuscript substantially as given by this author, but appear to have been derived from an earlier age, and to have lost in part their original signification. No month characters are found in this work, though common in the Dresden Codex.

10th. That the work (the original, if the one now in existence be a copy) was probably written about the middle or latter half of the fourteenth century. This conclusion is reached first, from internal evidence alone;

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second, from this, together with historical evidence. The tribe appears to have been at the time in a peaceable, quiet, and comparatively happy condition, which will carry us back to a time preceding the fall of Mayapan, and before the introduction of Aztec soldiers by the Cocomes.

11th. I think we find conclusive evidence in the work that the Ahau or Katun was a period of 24 years, and the great cycle of 312; also, that the series commenced with a Cauac instead of a Kan year, as has been usually supposed.

Lastly, I add that I think Brasseur was right in supposing that this work originated in that section of the peninsula known as Peten.

CYRUS THOMAS.

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INTRODUCTION.

BY DANIEL G. BRINTON, M. D.

THE GRAPHIC SYSTEM AND ANCIENT RECORDS OF THE MAYAS.

1.—INTRODUCTORY.

One of the ablest of living ethnologists has classified the means of recording knowledge under two general headings—Thought-writing and Sound-writing.[1] The former is again divided into two forms, the first and earliest of which is by pictures, the second by picture-writing.

The superiority of picture-writing over the mere depicting of an occurrence is that it analyzes the thought and expresses separately its component parts, whereas the picture presents it as a whole. The representations familiar among the North American Indians are usually mere pictures, while most of the records of the Aztec communities are in picture-writing.

The genealogical development of Sound-writing begins by the substitution of the sign of one idea for that of another whose sound is nearly or quite the same. Such was the early graphic system of Egypt, and such substantially to-day is that of the Chinese. Above this stands syllabic writing, as that of the Japanese, and the semi-syllabic signs of the old Semitic alphabet; while, as the perfected result of these various attempts, we reach at last the invention of a true alphabet, in which a definite figure corresponds to a definite elementary sound.

It is a primary question in American archæology, How far did the most

[1] Dr. Friedrich Müller, *Grundriss der Sprachwissenschaft*, Band i, pp. 151–156.

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cultivated nations of the Western Continent ascend this scale of graphic development? This question is as yet unanswered. All agree, however, that the highest evolution took place among the Nahuatl-speaking tribes of Mexico and the Maya race of Yucatan.

I do not go too far in saying that it is proved that the Aztecs used to a certain extent a phonetic system of writing, one in which the figures refer not to the thought, but to the sound of the thought as expressed in spoken language. This has been demonstrated by the researches of M. Aubin, and, of late, by the studies of Señor Orozco y Berra.[1]

Two evolutionary steps can be distinguished in the Aztec writing. In the earlier the plan is that of the rebus in combination with ideograms, which latter are nothing more than the elements of picture-writing. Examples of this plan are the familiar "tribute rolls" and the names of towns and kings, as shown in several of the codices published by Lord Kingsborough. The second step is where a conventional image is employed to represent the sound of its first syllable. This advances actually to the level of the syllabic alphabet; but it is doubtful if there are any Aztec records entirely, or even largely, in this form of writing. They had only reached the commencement of its development.

The graphic system of the Mayas of Yucatan was very different from that of the Aztecs. No one at all familiar with the two could fail at once to distinguish between the Manuscripts of the two nations. They are plainly independent developments.

We know much more about the ancient civilization of Mexico than of Yucatan; we have many more Aztec than Maya Manuscripts, and hence we are more at a loss to speak with positiveness about the Maya system of writing than about the Mexican. We must depend on the brief and unsatisfactory statements of the early Spanish writers, and on what little modern research has accomplished, for means to form a correct opinion; and there is at present a justifiable discrepancy of opinion about it among those who have given the subject most attention.

[1] Aubin, *Mémoire sur la Peinture didactique et l'Écriture figurative des anciens Mexicains*, in the introduction to Brasseur (de Bourbourg)'s *Histoire des Nations civilisées du Mexique et de l'Amérique Centrale*, tom. i; Manuel Orozco y Berra, *Ensayo de Descifracion geroglifica*, in the *Anales del Museo nacional de México*, tom. i, ii.

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2.—DESCRIPTIONS BY SPANISH WRITERS.

The earliest exploration of the coast of Yucatan was that of Francisco Hernandez de Cordova, in 1517. The year following, a second expedition, under Juan de Grijalva, visited a number of points between the island of Cozumel and the Bahia de Terminos.

Several accounts of Grijalva's voyage have been preserved, but they make no distinct reference to the method of writing they found in use. Some native books were obtained, however, probably from the Mayas, and were sent to Spain, where they were seen by the historian Peter Martyr. He describes them in general terms, and compares the characters in which they were written to the Egyptian hieroglyphics, some of which he had seen in Rome. He supposes that they contain the laws and ceremonies of the people, astronomical calculations, the deeds of their kings, and other events of their history. He also speaks in commendation of the neatness of their general appearance and the skill with which the drawing and painting were carried out. He further mentions that the natives used this method of writing or drawing in the affairs of common life.[1]

Although Yucatan became thus early known to the Spaniards, it was not until 1541 that a permanent settlement was effected, in which year Francisco de Montejo, the younger, advanced into the central province of Ceh Pech, and established a city on the site of the ancient town called *Ichcanziho*, which means "the five (temples) of many oracles (or serpents)," to which he gave the name *Mérida*, on account of the magnificent ancient edifices he found there.

Previous to this date, however, in 1534, Father Jacobo de Testera, with four other missionaries, proceeded from Tabasco up the west coast to the neighborhood of the Bay of Campeachy. They were received amicably by the natives, and instructed them in the articles of the Christian faith. They also obtained from the chiefs a submission to the King of Spain; and I mention this early missionary expedition for the fact stated that each chief signed this act of submission "with a certain mark, like an autograph."

[1] Peter Martyr, decad. iv, cap. viii.

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This document was subsequently taken to Spain by the celebrated Bishop Las Casas.[1] It is clear from the account that some definite form of signature was at that time in use among the chiefs.

It might be objected that these signatures were nothing more than rude totem marks, such as were found even among the hunting tribes of the Northern Mississippi Valley. But Las Casas himself, in whose possession the documents were, here comes to our aid to refute this opinion. He was familiar with the picture-writing of Mexico, and recognized in the hieroglyphics of the Mayas something different and superior. He says expressly that these had inscriptions, writings, in certain characters, the like of which were found nowhere else.[2]

One of the early visitors to Yucatan after the conquest was the Pope's commissary-general, Father Alonzo Ponce, who was there in 1588. Many natives who had grown to adult years in heathenism must have been living then. He makes the following interesting observation:

"The natives of Yucatan are, among all the inhabitants of New Spain, especially deserving of praise for three things: First, that before the Spaniards came they made use of characters and letters, with which they wrote out their histories, their ceremonies, the order of sacrifices to their idols, and their calendars, in books made of the bark of a certain tree. These were on very long strips, a quarter or a third (of a yard) in width, doubled and folded, so that they resembled a bound book in quarto, a little larger or smaller. These letters and characters were understood only by the priests of the idols (who in that language are called Ahkins) and a few principal natives. Afterwards some of our friars learned to understand and read them, and even wrote them."[3]

The interesting fact here stated, that some of the early missionaries

[1] "Se sujetaron de su propria voluntad al Señorio de los Reies de Castilla, recibiendo al Emperador, como Rei de España, por Señor supremo y universal, e hicieron ciertas señales, como Firmas; las quales, con testimonio de los Religiosos Franciscos, que alli estaban, llevó consigo el buen Obispo de Chiapa, Don Fr. Bartolomè de las Casas, amparo, y defensa de estos Indios, quando se fué á España." Torquemada, *Monarquia Indiana*, lib. xix, cap. xiii.

[2] "Letreros de ciertos caracteres que en otra ninguna parte." Las Casas, *Historia apologetica de las Indias Occidentales*, cap. cxxiii.

[3] *Relacion Breve y Verdadera de Algunas Cosas de las muchas que sucedieron al Padre Fray Alonso Ponce, Commissario General, en las Provincias de la Nuera España*, in the *Coleccion de Documentos para la Historia de España*, tom. lviii, p. 392. The other traits he praises in the natives of Yucatan are their freedom from sodomy and cannibalism.

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not only learned to read these characters, but employed them to instruct the Indians, has been authenticated by a recent discovery of a devotional work written in this way.

The earliest historian of Yucatan is Fr. Bernardo de Lizana.[1] But I do not know of a single complete copy of his work, and only one imperfect copy, which is, or was, in the city of Mexico, from which the Abbé Brasseur (de Bourbourg) copied and republished a few chapters. Lizana was himself not much of an antiquary, but he had in his hands the Manuscripts left by Father Alonso de Solana, who came to Yucatan in 1565, and remained there till his death, in 1599. Solana was an able man, acquired thoroughly the Maya tongue, and left in his writings many notes on the antiquities of the country.[2] Therefore we may put considerable confidence in what Lizana writes on these matters.

The reference which I find in Lizana to the Maya writings is as follows:

"The most celebrated and revered sanctuary in this land, and that to which they resorted from all parts, was this town and temples of Ytzamal, as they are now called; and that it was founded in most ancient times, and that it is still known who did found it, will be set forth in the next chapter.

"III. The history and the authorities which we can cite are certain ancient characters, scarcely understood by many, and explained by some old Indians, sons of the priests of their gods, who alone knew how to read and expound them, and who were believed in and revered as much as the gods themselves," etc.[3]

We have here the positive statement that these hieroglyphic inscriptions were used by the priests for recording their national history, and that by means of them they preserved the recollection of events which took place in a very remote past.

Another valuable early witness, who testifies to the same effect, is the Dr. Don Pedro Sanchez de Aguilar, who was *cura* of Valladolid, in Yucatan,

[1] Bernardo de Lizana, *Historia de Yucatan. Devocionario de Nuestra Señora de Izmal, y Conquista Espiritual.* 8vo. Pinciæ (Valladolid), 1633.

[2] For these facts see Diego Lopez Cogolludo, *Historia de Yucatan,* lib. ix, cap. xv. Cogolludo adds that in his time (1650–'60) Solana's MSS. could not be found; Lizana may have sent them to Spain.

[3] I add the original of the most important passage: "La historia y autores que podemos alegar son unos antiguos caracteres, mal entendidos de muchos, y glossados de unos indios antiguos, que son hijos de los sacerdotes de sus dioses, que son los que solo sabian leer y adivinar, y a quien creian reverenciavan como á Dioses destos."

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in 1596, and, later, dean of the chapter of the cathedral at Merida. His book, too, is extremely scarce, and I have never seen a copy; but I have copious extracts from it, made by the late Dr. C. Hermann Berendt from a copy in Yucatan. Aguilar writes of the Mayas:

"They had books made from the bark of trees, coated with a white and durable varnish. They were ten or twelve yards long, and were gathered together in folds, like a palm leaf. On these they painted in colors the reckoning of their years, wars, pestilences, hurricanes, inundations, famines, and other events. From one of these books, which I myself took from some of these idolaters, I saw and learned that to one pestilence they gave the name *Mayacimil*, and to another *Ocnakuchil*, which mean 'sudden deaths' and 'times when the crows enter the houses to eat the corpses.' And the inundation they called *Hunyecil*, the submersion of trees." [1]

The writer leaves it uncertain whether he learned these words directly from the characters of the book or through the explanations of some native.

It has sometimes been said that the early Spanish writers drew a broad line between the picture-writing that they found in America and an alphabetic script. This may be true of other parts, but is not so of Yucatan. These signs, or some of them, are repeatedly referred to as "letters," *letras*.

This is pointedly the case with Father Gabriel de San Buenaventura, a French Franciscan who served in Yucatan about 1670–'80. He published one of the earliest grammars of the language, and also composed a dictionary in three large volumes, which was not printed. Father Beltran de Santa Rosa quotes from it an interesting tradition preserved by Buenaventura, that among the inventions of the mythical hero-god of the natives, *Itzamna*, or *Kinich ahau*, was that of "the letters of the Maya language," with which letters they wrote their books.[2] Itzamna, of course, dates back to a misty antiquity, but the legend is of value, as showing that the characters used by the natives did, in the opinion of the early missionaries, deserve the name of *letters*.

[1] Pedro Sanchez de Aguilar, *Informe contra Idolorum cultores del Obispado de Yucatan*. 4to. Madrid, 1639, ff. 124.

[2] "El primero que halló las letras de la lengua Maya é hizó el cómputo de los años, meses y edades, y lo enseño todo a los Indios de esta Provincia, fué un Indio llamado *Kinchahau*, y por otro nombre Tzamna." Fr. Pedro Beltran de Santa Rosa Maria, *Arte del Idioma Maya*, p. 16 (2d ed., Mérida de Yucatan, 1859).

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Father Diego Lopez Cogolludo is the best-known historian of Yucatan. He lived about the middle of the seventeenth century, and says himself that at that time there was little more to be learned about the antiquities of the race. He adds, therefore, substantially nothing to our knowledge of the subject, although he repeats, with positiveness, the statement that the natives "had characters by which they could understand each other in writing, such as those yet seen in great numbers on the ruins of their buildings."[1]

This is not very full. Yet we know to a certainty that there were quantities of these manuscripts in use in Yucatan for a generation after Cogolludo wrote. To be sure, those in the christianized districts had been destroyed, wherever the priests could lay their hands on them; but in the southern part of the peninsula, on the islands of Lake Peten and adjoining territory, the powerful chief, Canek, ruled a large independent tribe of Itzas. They had removed from the northern provinces of the peninsula somewhere about 1450, probably in consequence of the wars which followed the dissolution of the confederacy whose capital was the ancient city of Mayapan.

Their language was pure Maya, and they had brought with them in their migration, as one of their greatest treasures, the sacred books which contained their ancient history, their calendar and ritual, and the prophecies of their future fate. In the year 1697 they were attacked by the Spaniards, under General Don Martin de Ursua; their capital, on the island of Flores, in Lake Peten, taken by storm; great numbers of them slaughtered or driven into the lake to drown, and the twenty-one temples which were on the island razed to the ground.

A minute and trustworthy account of these events has been given by Don Juan de Villagutierre Soto-Mayor, in the course of which several references to the sacred books, which he calls *Analtés*, occur.

The king Canek, he tells us, in reading in his *Analtés*, had found notices of the northern provinces of Yucatan and of the fact that his pre-

[1] Diego Lopez Cogolludo, *Historia de Yucatan*, lib. iv, cap. iii. The original is: "No acostumbraban escribir los pleitos, aunque tenian caracteres con que se entendian, de que se ven muchos en las ruinas de los edificios."

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decessors had come thence, and had communicated these narratives to his chiefs.[1]

These books are described as showing "certain characters and figures, painted on certain barks of trees, each leaf or tablet about a quarter (of a yard) wide, and of the thickness of a piece of eight, folded at one edge and the other in the manner of a screen, called by them *Analtehes*."[2]

When the island of Flores was captured these books were found stored in the house of the king Canek, containing the account of all that had happened to the tribe.[3] What disposition was made of them we are not informed.

I have reserved until now a discussion of the description of the Maya writing presented in the well-known work of Diego de Landa, the second bishop of Yucatan. Landa arrived in the province in August, 1549, and died in April, 1579, having passed most of the intervening thirty years there in the discharge of his religious duties. He became well acquainted with the language, which, for that matter, is a comparatively easy one, and though harsh, illiberal, and bitterly fanatic, he paid a certain amount of attention to the arts, religion, and history of the ancient inhabitants.

The notes that he made were copied after his death and reached Spain, where they are now preserved in the library of the Royal Academy of History, Madrid. In 1864 they were published at Paris, with a French translation, by the Abbé Brasseur (de Bourbourg).

Of all writers Landa comes the nearest telling us how the Mayas used their system of writing; but, unfortunately, he also is so superficial and obscure that his words have given rise to very erroneous theories. His description runs as follows:

"This people also used certain characters or letters, with which they wrote in their books their ancient matters and their sciences, and with them (*i. e.*, with their characters or letters), and figures (*i. e.*, drawings or pic-

[1] "Porque lo leia su Rey en sus Analtehes, tenian Noticias de aquellas Provincias de Yucatan (que Analtehes, ò Historias, es una misma cosa) y de que sus Pasados avian Salido de ellas." *Historia de la Conquista de la Provincia de el Itza, Reduccion y Progressos de la de el Lacandon*, etc. (folio, Madrid, 1701) lib. vi, cap. iv.

[2] *Ibid.*, lib. vii, cap. i.

[3] "Y en su casa tambien tenia de estos Idolos, y Messa de Sacrificios, y los Analtehes, ò Historias de todo quanto los avia sucedido." *Ibid.*, lib. viii, cap. xiii.

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tures), and some signs in the figures, they understood their matters, and could explain them and teach them. We found great numbers of books in these letters, but as they contained nothing that did not savor of superstition and lies of the devil we burnt them all, at which the natives grieved most keenly and were greatly pained.

"I will give here an *a*, *b*, *c*, as their clumsiness does not allow more, because they use one character for all the aspirations of the letters, and for marking the parts another, and thus it could go on *in infinitum*, as may be seen in the following example. *Le* means a noose and to hunt with one; to write it in their characters, after we had made them understand that there are two letters, they wrote it with three, giving to the aspiration of the *l* the vowel *é*, which it carries before it; and in this they are not wrong so to use it, if they wish to, in their curious manner. After this they add to the end the compound part."[1]

I need not pursue the quotation. The above words show clearly that the natives did not in their method of writing analyze a word to its primitive phonetic elements. "This," said the bishop, "we had to do for them." Therefore they did not have an alphabet in the sense of the word as we use it.

On the other hand, it is equally clear, from his words and examples, that they had figures which represented sounds, and that they combined these and added a determinative or an ideogram to represent words or phrases.

The alphabet he gives is, of course, not one which can be used as the Latin *a*, *b*, *c*. It is surprising that any scholar should ever have thought so. It would be an exception, even a contradiction, to the history of the evolution of human intelligence to find such an alphabet among nations of the stage of cultivation of the Mayas or Aztecs.

The severest criticism which Landa's figures have met has been from the pen of the able antiquary, Dr. Phillip J. J. Valentini. He discovered that many of the sounds of the Spanish alphabet were represented by signs or pictures of objects whose names in the Maya begin with that sound. Thus he supposes that Landa asked an Indian to write in the native character the Spanish letter *a*, and the Indian drew an obsidian knife, which,

[1] Diego de Landa, *Relacion de las Cosas de Yucatan*, pp. 316, 318, *seq.*

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says Dr. Valentini, is in the Maya *ach;* in other words, it begins with the vowel *a.* So for the sound *ki*, the Indian gave the sign of the day named *kimich.*

Such is Dr. Valentini's theory of the formation of Landa's alphabet; and not satisfied with lashing with considerable sharpness those who have endeavored by its aid to decipher the Manuscripts and mural inscriptions, he goes so far as to term it "a Spanish fabrication."

I shall not enter into a close examination of Dr. Valentini's supposed identification of these figures. It is evident that it has been done by running over the Maya dictionary to find some word beginning with the letter under criticism, the figurative representation of which word might bear some resemblance to Landa's letter. When the Maya fails, such a word is sought for in the Kiche or other dialect of the stock; and the resemblances of the pictures to the supposed originals are sometimes greatly strained.

But I pass by these dubious methods of criticism as well as several lexicographic objections which might be raised. I believe, indeed, that Dr. Valentini is not wrong in a number of his identifications. But the conclusion I draw is a different one. Instead of proving that this is picture-writing, it indicates that the Mayas used the second or higher grade of phonetic syllabic writing, which, as I have before observed, has been shown by M. Aubin to have been developed to some extent by the Aztecs in some of their histories and connected compositions (see above page xxviii). Therefore the importance and authenticity of Landa's alphabet are, I think, vindicated by this attempt to treat it as a "fabrication."[1]

Landa also gives some interesting details about their books. He writes:

"The sciences that they taught were the reckoning of the years, months, and days, the feasts and ceremonies, the administration of their sacraments, the fatal days and seasons, their methods of divination and prophecies, events about to happen, remedies for diseases, their ancient history, together with the art of reading and writing their books with characters which were written, and pictures which represented the things written.

"They wrote their books on a large sheet doubled into folds, which

[1] Dr. Valentini's article was published in the *Proceedings of the American Antiquarian Society*, 1880, and also separately.

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was afterwards inclosed between two boards which they decorated handsomely. They were written from side to side in columns, as they were folded. They manufactured this paper from the root of a tree and gave it a white surface on which one could write. Some of the principal nobles cultivated these sciences out of a taste for them, and although they did not make public use of them, as did the priests, yet they were the more highly esteemed for this knowledge."[1]

From the above extracts from Spanish writers we may infer that—

1. The Maya graphic system was recognized from the first to be distinct from the Mexican.

2. It was a hieroglyphic system, known only to the priests and a few nobles.

3. It was employed for a variety of purposes, prominent among which was the preservation of their history and calendar.

4. It was a composite system, containing pictures (*figuras*), ideograms (*caracteres*), and phonetic signs (*letras*).

3.—REFERENCES FROM NATIVE SOURCES.

We might reasonably expect that the Maya language should contain terms relating to their books and writings which would throw light on their methods. So, no doubt, it did. But it was a part of the narrow and crushing policy of the missionaries not only to destroy everything that related to the times of heathendom, but even to drop all words which referred to ancient usages. Hence the dictionaries are more sterile in this respect than we might have supposed.

The verb "to write" is *dzib*, which, like the Greek γράφειν, meant also to draw and to paint. From this are derived the terms *dziban*, something written; *dzibal*, a signature, etc.

Another word, meaning to write, or to paint in black, is *zabac*. As a noun, this was in ancient times applied to a black fluid extracted from the *zabacche*, a species of tree, and used for dyeing and painting. In the sense

[1] Diego de Landa, *Relacion de las Cosas de Yucatan*, p. 44.

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of "to write," *zabac* is no longer found in the language, and instead of its old meaning it now refers to ordinary ink.

The word for letter or character is *uooh*. This is a primitive root found with the same or a closely allied meaning in other branches of this linguistic stock, as, for instance, in the Kiché and Cakchiquel. As a verb, pret. *uootah*, fut. *uooté*, it also means to form letters, to write; and from the passive form, *uoohal*, we have the participial noun, *uoohan*, something written, a manuscript.

The ordinary word for book, paper, or letter, is *huun*, in which the aspirate is almost mute, and is dropped in the forms denoting possession, as *u uun*, my book, *yuunil Dios*, the book of God, *il* being the so-called "determinative" ending. It occurs to me as not unlikely that *uun*, book, is a syncopated form of *uoohan*, something written, given above. To read a book is *xochun*, literally to *count* a book.

According to Villagutierre Soto-Mayor, the name of the sacred books of the Itzas was *analté*. In the printed *Diccionario de la Lengua Maya*, by Don Juan Pio Perez, this is spelled *anahté*, which seems to be a later form.

The term is not found in several early Maya dictionaries in my possession, of dates previous to 1700. The Abbé Brasseur, indeed, in a note to Landa, explains it to mean "a book of wood," but it can have no such signification. Perhaps it should read *hunilté*, this being composed of *hunil*, the "determinative" form of *huun*, a book, and the termination *té*, which, added to nouns, gives them a specific sense, *e. g. amayté*, a square figure, from *amay*, an angle; *tzucubté*, a province, from *tzuc*, a portion separated from the rest. It would mean especially the sacred or national books.

The particular class of books which were occupied with the calendar and the ritual were called *tzolanté*, which is a participial noun from the verb *tzol*, passive *tzolal*, to set in order, to arrange, with the suffix *té*. By these books were set in order and arranged the various festivals and fasts.

When the conquest was an accomplished fact and the priests had got the upper hand, the natives did not dare use their ancient characters. They exposed themselves to the suspicion of heresy and the risk of being burnt alive, as more than once happened. But their strong passion for literature remained, and they gratified it as far as they dared by writing in their own

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tongue with the Spanish alphabet volumes whose contents are very similar to those described by Landa (above, page xxvi).

A number of these are still in existence and offer an interesting field for antiquarian and linguistic study. Although, as I say, they are no longer in the Maya letters, they contain quite a number of ideograms, as the signs of the days and the months, and occasional cartouches and paintings, which show that they were made to resemble the ancient manuscripts as closely as possible.

They also contain not infrequent references to the "writing" of the ancients, and what are alleged to be extracts from the old records, chiefly of a mystic character. The same terms are employed in speaking of the ancient graphic system as of the present one. Thus in one of them, known as "The Book of Chilan Balam of Chumayel," occurs this phrase: *Bay dzibanil tumenel Evangelistas yetel profeta Balam*—"as it was written by the Evangelists, and also by the prophet Balam," this Balam being one of their own celebrated ancient seers.

Among the predictions preserved from a time anterior to the Conquest, there are occasional references to their books and their contents. I quote, as an example, a short prophecy attributed to Ahkul Chel, "priest of the idols." It is found in several of the oldest Maya manuscripts, and is in all probability authentic, as it contains nothing which would lead us to suppose that it was one of the "pious frauds" of the missionaries.

"Enhi ɔibte katune yume, maixtan à naaté;
Ualac u talel, mac bin ca ɔabac tu coɔ pop;
Katune yume bin uluc, holom uil tucal ya;
Tali ti xaman, tali ti chikine; ahkinob uil yane yume;
Mac to ahkin, mac to ahbobat, bin alic u than uoohe,
Ychil Bolon Ahau, maixtan à naaté?"

"The lord of the cycle has been written down, but ye will not understand;

He has come, who will give the enrolling of the years;

The lord of the cycle will arrive, he will come on account of his love;

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He came from the north, from the west. There are priests, there are fathers,

But what priest, what prophet, shall explain the words of the books,

In the Ninth Ahau, which ye will not understand?"[1]

From this designedly obscure chant we perceive that the ancient priests inscribed their predictions in books, which were afterward explained to the people. The expression *bin alic u than uoohe*—literally, "he will speak the words of the letters"—seems to point to a phonetic writing, but as it may be used in a figurative sense, I shall not lay stress on it.[2]

4.—THE EXISTING CODICES.

The word *Codex* ought to be confined, in American archæology, to manuscripts in the original writing of the natives. Some writers have spoken of the "Codex Chimalpopoca," the "Codex Zumarraga," and the "Codex Perez," which are nothing more than manuscripts either in the native or Spanish tongues written with the Latin alphabet.

Of the Maya Codices known, only three have been published, which I will mention in the order of their appearance.

The Dresden Codex.—This is an important Maya manuscript preserved in the Royal Library at Dresden. How or when it came to Europe is not known. It was obtained from some unknown person in Vienna in 1739.

[1] I add a few notes on this text:

Enhi is the preterit of the irregular verb *hal*, to be, pret. *enhi*, fut. *enac*. *Katun yum*, father or lord of the Katun or cycle. Each Katun was under the protection of a special deity or lord, who controlled the events which occurred in it. *Tu coo pop*, lit., "for the rolling up of Pop," which was the first month in the Maya year. *Holom* is an archaic future from *hul;* this form in *om* is mentioned by Buenaventura, *Arte de la Lengua Maya*, 1684, and is frequent in the sacred language, but does not occur elsewhere. *Tucal ya*, on account of his love; but *ya* means also "suffering," "wound," and "strength," and there is no clue which of these significations is meant. *Ahkinob;* the original has *tukinob*, which I suspect is an error; it would alter the phrase to mean "In that day there are fathers" or lords, the word *yum*, father, being constantly used for lord or ruler. The *ahkin* was the priest; the *ahbobat* was a diviner or prophet. The 9th Ahau Katun was the period of 20 years which began in 1541, according to most native authors, but according to Landa's reckoning in the year 1561.

[2] In quoting and explaining Maya words and phrases in this article, I have in all instances followed the *Diccionario Maya-Español del Convento de Motul* (Yucatan); a copy of which in manuscript (one of the only two in existence) is in my possession. It was composed about 1580. The still older Maya dictionary of Father Villalpando, printed in Mexico in 1571, is yet in existence in one or two copies, but I have never seen it.

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This Codex corresponds in size, appearance, and manner of folding to the descriptions of the Maya books which I have presented above from Spanish sources. It has thirty-nine leaves, thirty-five of which are colored and inscribed on both sides, and four on one side only, so that there are only seventy-four pages of matter. The total length of the sheet is 3.5 meters, and the height of each page is 0.295 meter, the width 0.085 meter.

The first publication of any portion of this Codex was by Alexander von Humboldt, who had five pages of it copied for his work, *Vues des Cordillères et Monumens des Peuples Indigènes de l'Amérique*, issued at Paris in 1813 (not 1810, as the title-page has it). It was next very carefully copied in full by the Italian artist, Agostino Aglio, for the third volume of Lord Kingsborough's great work on *Mexican Antiquities*, the first volume of which appeared in 1831.

From Kingsborough's work a few pages of the Codex have been from time to time republished in other books, which call for no special mention.

Two pages were copied from the original in 1855, and appeared in Wuttke's *Geschichte der Schrift*, Leipzig, 1872.

Finally, in 1880, the whole was very admirably chromo-photographed by A. Naumann's establishment at Leipzig to the number of fifty copies, forty of which were placed on sale. It is the first work which was ever published in chromo-photography, and has, therefore, a high scientific as well as antiquarian interest.

The editor was Dr. E. Förstemann, aulic counselor and librarian-in-chief of the Royal Library. He wrote an introduction (17 pp. 4to) giving a history of the manuscript, and bibliographical and other notes upon it of much value. One opinion he defends must not be passed by in silence. It is that the Dresden Codex is not one but parts of two original manuscripts written by different hands.

It appears that it has always been in two unequal fragments, which all previous writers have attributed to an accidental injury to the original. Dr. Förstemann gives a number of reasons for believing that this is not the correct explanation, but that we have here portions of two different books, having general similarity but also many points of diversity.

This separation led to an erroneous (or perhaps erroneous) sequence of

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the pages in Kingsborough's edition. The artist Aglio took first one fragment and copied both sides, and then proceeded to the next one; and it is not certain that in either case he begins with the first page in the original order of the book.

The Codex Peresianus, or *Codex Mexicanus, No. II*, of the *Bibliothèque Nationale* of Paris.—This fragment—for it is unfortunately nothing more—was discovered in 1859 by Prof. Leon de Rosny among a mass of old papers in the National Library. It consists of eleven leaves, twenty-two pages, each 9 inches long and 5¼ inches wide. The writing is very much defaced, but was evidently of a highly artistic character, probably the most so of any manuscript known. It unquestionably belongs to the Maya manuscripts.

Its origin is unknown. The papers in which it was wrapped bore the name "Perez," in a Spanish hand of the seventeenth century, and hence the name "Peresianus" was given it. By order of the Minister of Public Instruction ten photographic copies of this Codex, without reduction, were prepared for the use of scholars. None of them was placed on sale, and so far as I know the only one which has found its way to the United States is that in my own library. An ordinary lithographic reproduction was given in the *Archives paléographiques de l'Orient et de l'Amérique*, tome i (Paris, 1869–'71).

The Codex Tro, or *Troano*.—The publication of this valuable Codex we owe to the enthusiasm of the Abbé Brasseur (de Bourbourg). On his return from Yucatan in 1864 he visited Madrid, and found this Manuscript in the possession of Don Juan de Tro y Ortolano, professor of paleography, and himself a descendant of Hernan Cortes. The abbé named it *Troano*, as a compound of the two names of its former owner; but later writers often content themselves by referring to it simply as the *Codex Tro*.

It consists of thirty-five leaves and seventy pages, each of which is larger than a page of the Dresden Codex, but less than one of the *Codex Peresianus*. It was published by chromolithography at Paris, in 1869, prefaced by a study on the graphic system of the Mayas by the abbé, and an attempt at a translation. The reproduction, which was carried out under the efficient care of M. Leonce Angrand, is extremely accurate.

All three of these codices were written on paper manufactured from

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the leaves of the maguey plant, such as that in common use in Mexico. In Maya the maguey is called *ci*, the varieties being distinguished by various prefixes. It grows luxuriantly in most parts of Yucatan, and although the favorite tipple of the ancient inhabitants was mead, they were not unacquainted with the intoxicating *pulque*, the liquor from the maguey, if we can judge from their word for a drunkard, *ci-vinic* (*vinic*=man). The old writers were probably in error when they spoke of the books being made of the barks of trees; or, at least, they were not all of that kind.

The above-mentioned three Manuscripts are the only ones which have been published. I shall not enumerate those which exist in private hands. So long as they are withheld from the examination of scientific men they can add nothing to the general stock of knowledge, and as statements about them are not verifiable it is useless to make any. I may merely say that there are two in Europe and two or three in Mexico, which, from the descriptions I have heard or read of them, I think are probably of Maya origin.

In addition to the Manuscripts, we have the mural paintings and inscriptions found at Palenque, Copan, Chichen Itza, and various ruined cities within the boundaries of the Maya-speaking races. There is no mistaking these inscriptions. They are unquestionably of the same character as the Manuscripts, although it is also easy to perceive variations, which are partly owing to the necessary differences in technique between painting and sculpture; partly, no doubt, to the separation of age and time.

Photographs and "squeezes" have reproduced many of these inscriptions with entire fidelity. We can also depend upon the accurate pencil of Catherwood, whose delineations have never been equalled. But the pictures of Waldeck and some other travelers do not deserve any confidence, and should not be quoted in a discussion of the subject.

Both in the inscriptions, manuscripts, and paintings the forms of the letters are rounded, and a row of them presents the outlines of a number of pebbles cut in two. Hence the system of writing has been called "calculiform," from *calculus*, a pebble. The expression has been criticised, but I agree with Dr. Förstemann in thinking it a very appropriate one. It was suggested, I believe, by the Abbé Brasseur (de Bourbourg).

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5.—EFFORTS AT INTERPRETATION.

The study of the Maya hieroglyphic system is still in its infancy. It is only two years since an unquestionably faithful reproduction of the Dresden Codex supplied a needed standard of comparison for the Codex Troano. Some knowledge of the Maya language, if not indispensable, is certainly desirable in such an undertaking, particularly if the writing is in any degree phonetic. But it was not till 1877 that any printed dictionary of that tongue could be had. The publication of the *Diccionario de la Lengua Maya* of Don Juan Pio Perez was completed in that year, and, though still leaving much to be desired, especially in reference to the ancient forms and meanings of words, it is a creditable monument of industry.

When the Abbé Brasseur edited the Codex Troano he also attempted an explanation of its contents. He went so far as to give an interlinear version of some pages, and wonderful work he made of it! But I am relieved of expressing an opinion as to his success by his own statement in a later work, that he had, by mistake, commenced at the end of the Codex instead of its beginning; that he had read the lines from right to left, when he should have read them from left to right; and that his translations were not intended for more than mere experiments.[1]

The attempt at a translation of the Dresden Codex by Mr. William Bollaert, published in the *Memoirs of the Anthropological Society of London*, 1870, may be passed over for the same reason. He also "read from the bottom upwards, and from right to left," and his renderings were altogether fanciful.

The first who addressed himself to an investigation of the Maya hieroglyphics with anything like a scientific method was M. Hyacinthe de Charencey, of France. I append, in a note, a list of his essays on this subject, with their dates, so far as I know them.[2] When they first appeared

[1] Br sseur de Bourbourg, *Bibliothèque Mexico-Guatémalienne, précédée d'un Coup d'Œil sur les Études Américaines*, p. xxvii, note (Paris, 1871).

[2] Hyacinthe de Charencey, *Essai de Déchiffrement d'un fragment d'inscription Palenquéne*, in the Actes de la Société Philologique, mars 1870.

Essai de Déchiffrement d'un fragment du Manuscript Troano, in the *Revue de Philologie et d'Ethnographie*, Paris, 1875.

The above two were republished under the title: *Études de Paleographie Américaine; Déchiffrement des Écritures Calculiformes ou Mayas.*

Recherches sur le Codex Troano, Paris, Ernest Leroux, éditeur, 1876, 8vo., p. 16.

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I translated the results, and gave them to the public in this country in the same year (1870), together with a copy of the alphabet of Landa,[1] which was the earliest notice of the subject which appeared in the United States.

The conclusion which M. de Charencey reached was that the Codex Troano is "largely made up of combinations of numerals and reckonings more or less complicated, either astronomical or astrological, the precise purpose of which it were as yet premature to state." He especially addressed himself to the Plates VIII to XIII, and showed by diagrams the arrangement in them of the signs of the days, and the probability that this arrangement was taken from a "wheel," such as we know the Mayas were accustomed to use in adjusting their calendar.

An ingenious and suggestive analysis of Landa's alphabet and of various figures in the Dresden and Troano Codices was carried out by Dr. Harrison Allen, professor of comparative anatomy in the University of Pennsylvania. It was published in 1875, in the *Transactions of the American Philosophical Society.*

In the following year (1876) appeared the first part of Prof. Leon de Rosny's *Essai sur le Déchiffrement de l'Écriture Hiératique de l'Amérique Centrale*, folio. The second part was published shortly afterward, but the third part not till some years later. Professor de Rosny has collected many facts which throw a side light on the questions he discusses. He points out that the signs are to be read from left to right; he gives a valuable list of variants of the same sign as it appears in different manuscripts; and he distinguishes the signs of the cardinal points, although it is doubtful whether he assigns to each its correct value. He has also offered strong evidence to fix the phonetic value of some characters. Altogether, his work ranks as the most thorough and fruitful which has heretofore been done in this field.

In 1879 Prof. Charles Rau published, through the Smithsonian Institution, his work, "The Palenque Tablet in the United States National Museum, Washington." Its fifth chapter is devoted to the "aboriginal writing in Mexico, Yucatan, and Central America," and offers a judicious summary of what had been accomplished up to that date. He defends the position,

[1] The Ancient Phonetic Alphabet of Yucatan. By D. G. Brinton, M. D. New York, J. Sabin & Sons, 1870, 8vo., p. 8.

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which I think is unquestionably the correct one, that the Maya writing is certainly something more than systematized picture-writing, and yet that we cannot expect to find in it anything corresponding to our own alphabet.

In the same year (1879) Dr. Carl Schultz-Sellack published in the *Zeitschrift für Ethnologie*, Bd., XI, th eresults of some studies he had made of the Dresden Codex, compared with others published in Kingsborough's work, especially with reference to the signs of the gods of the cardinal points. He recognized the same signs as De Rosny, but arranged them differently. Many of his comparisons of Maya with Aztec pictographs are suggestive and merit attentive consideration; but he speaks a great deal too confidently of their supposed close relationship.[1]

Although Dr. Förstemann, in his introductory text to the Dresden Codex (1880), expressly disclaims any intention to set up as an expounder of its contents, he nevertheless compared carefully the three published codices, and offers (pp. 15–17) a number of acute suggestions and striking comparisons, which the future student must by no means overlook.

Finally, the "Studies in American Picture-Writing" of Prof. Edward S. Holden, published in the "First Annual Report of the Bureau of Ethnology, 1881," are to be included in the list. He devotes his attention principally to the mural inscriptions, and only incidentally to the Manuscripts. The method he adopts is the mathematical one employed in unriddling cryptography. By its application he is convinced that the writing is from left to right, and from above downward; that the signs used at Copan and Palenque were the same, and had the same meaning; that in proper names, at least, the picture-writing was not phonetic; and that in all probability it had no phonetic elements in it whatever.

As Professor Holden states that he is entirely unacquainted with the Maya language, and but slightly with the literature of the subject; as his method would confessedly not apply to the characters, if phonetic, without a knowledge of the Maya; and as he assumes throughout his article that the mythology and attributes of the Maya divinities were the same as those of the Aztec, for which the evidence is very far from sufficient, we must

[1] Dr. Schultz-Sellack's article is entitled "*Die Amerikanischen Götter der Vier Weltgegenden und ihre Tempel in Palenque.*"

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place his attempt at decipherment along with others which have failed through an inadequate grasp of the factors of the problem. Nevertheless, his attentive study of the relative positions of the signs have yielded results which will merit the thanks of future students.

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A STUDY OF THE MANUSCRIPT TROANO.

BY CYRUS THOMAS.

CHAPTER I.

THE MANUSCRIPT AND ITS CHARACTER.

This manuscript was found about the year 1866,[1] at Madrid, Spain, by the Abbe Brasseur de Bourbourg, while on a visit to the library of the Royal Historical Academy, and named by him "Manuscript Troano," in honor of its possessor, Don Juan de Tro y Ortolano.

So far as I am aware, nothing more is known in reference to its history; we are not even informed by its last owner where or how he obtained it. In ordinary cases this would be sufficient to arouse our suspicions as to its genuineness, but in this case the work itself is sufficient to dispel all such suspicions, a fact which will become apparent to the reader before reaching the end of the present paper.

This work was reproduced in *fac-simile* by a chromolithographic process, by the *Commission Scientifique du Mexique* under the auspices of the French Government, Brasseur being the editor.

The original is written on a strip of Maguey paper about 14 feet long and 9 inches wide, the surface of which is covered with a white paint or varnish, on which the characters and figures are painted in black, red, blue, and brown It is folded fan-like into thirty-five folds, presenting, when these are pressed together, the appearance of an ordinary octavo volume. The hieroglyphics and figures cover both sides of the paper, forming seventy pages; the writing and painting of the figures having been ex-

[1] I cannot find that the exact date of the discovery is given anywhere. Bancroft says "about 1865," but a careful examination of Brasseur's Introduction satisfies me it was at least as late as 1866.

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ecuted, apparently, after the paper was folded, so that this does not interfere with the writing.

The *fac-simile* edition is divided into two parts, paged separately; the first part containing thirty-five pages or plates, numbered with simple Roman numerals from I to XXXV; the second with Roman numerals accompanied by a star, thus: XII*; but this part has only thirty-four pages, numbered I* to XXXIV*; the first plate, which appears to be—as Brasseur has designated it—the "title page," is not numbered.

The two parts I presume are made to correspond with the two sides of the original; the title page being at the end of one side and forming the page on the first fold.

The lines and columns of written characters are uniformly black, some of the numeral characters red, others black; the pictorial portions are usually red, brown, or blue, but occasionally varied with black, and often simply outline figures. The background of the compartments or spaces on which the figures are painted is usually white, but in some cases it is blue, in others, brown or red. Several of the plates are more or less damaged, all of the imperfections, as it is claimed, being reproduced in the *fac-simile* edition.

Our colored plates, which are reproduced from the *fac-simile* work, will give the reader an idea of the characters and figures.

It is admitted by all who have made the comparison, that the written characters belong to the same class as those given by Landa.

Although there are numerous variations, and also some characters in the manuscript not given by him, yet most of his letter and day characters, especially the latter, can be found identical in form and details. As proof of this I give here the following examples of exact copies after Landa and the Manuscript:

L.

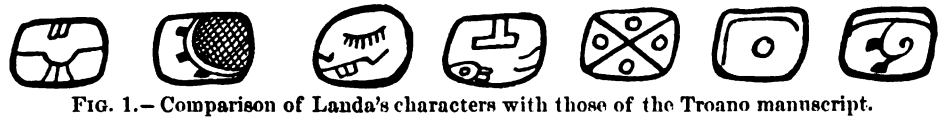
M. 

FIG. 1.—Comparison of Landa's characters with those of the Troano manuscript.

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This fact is sufficient of itself to authorize us to pronounce it a Maya document, a conclusion which we shall find strengthened as we proceed in our examination of its contents.

As what is known in regard to Mexican and Central American writings has been presented by Dr. Brinton in the Introduction, I will not go over the same ground here, but will confine myself to the special object in view, to wit: an explanation and discussion of what I believe to be real discoveries made during my examination of the contents of this work.

As before stated, an examination of this manuscript is sufficient to convince any one at all familiar with Landa's characters that those here used are substantially the same, be their signification what it may.

On almost every page are to be found columns of characters agreeing precisely with those given by him as representing the Maya days. These are generally placed at the left of the compartments or spaces containing the figures, and as a general rule there are five characters in a column. Another prominent feature is the great number of numeral characters—dots and short straight lines. These are found on every plate, often dozens on a single page.

The frequent occurrence of these day and numeral characters, often in connection, led to the belief that the work was a kind of religious calendar, a belief strongly supported by the character of the figures in the spaces. With this as the only opinion to hamper or aid me, as the case might be, I began the study of the Manuscript.

I was convinced that if I could form a correct idea of the general design of the work it would aid greatly in deciphering its characters. As the day and numeral characters seemed to afford the most direct road to this desired result, I began with these.

Brasseur de Bourbourg has designated the day columns "legends," believing them to contain a summary of what is written, or represented by the figures in the compartments to which they severally belong.

That they are characters representing the Maya days he admitted, but as the names of these characters have each one or more significations, it was his belief that they were used to express this signification, and not simply as the names of days.

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To be able to decide positively whether this opinion of the Abbe's was correct or not, would, I felt, be taking one important step toward ascertaining the contents of this mysterious document, as these day columns form a considerable part of it.

The frequent occurrence of numerals in connection with these day characters appeared to indicate dates or the numbering of days, somewhat as we find them in our ordinary calendars.

How to verify or disprove this inference was the first problem that presented itself.

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CHAPTER II.

THE MAYA CALENDAR.

The Maya divisions of time (no notice is taken here of the divisions of the day) were as follows: The day, the week, the month, the year, the five intercalated days, the week of years, the Ahau or Katun, the cycle of fifty-two years, and the Ahau Katun or great epoch.

The day ("Kin" or Sun) was used in the ordinary sense, each of the twenty days of the month having its name, as we name the days of our week, and its character or hieroglyph, as follows:

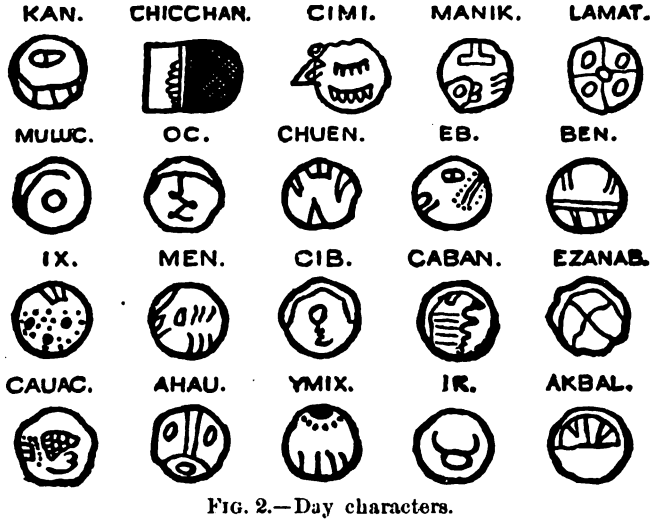

FIG. 2.—Day characters.

The characters here given are copied from Landa's work, our only original authority on this point. There are several important variations from these forms found in the Manuscript, but these, the orthography of the names according to different authors, together with the significations of the names, have been given by others, hence will not be repeated here. Although the month did not always commence with the same day, the order of the days as here given, to wit, Kan, Chicchan, Cimi, Manik, Lamat,

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Muluc, Oc, Chuen, Eb, Ben, Ix, Men, Cib, Caban, Ezanab, Cauac, Ahau, Ymix, Ik, Akbal, was always preserved. For example, if the month began with Muluc, the second day would be Oc, the third Chuen, and so on to Akbal; then followed Kan, just as we would name seven days commencing, say, with Wednesday, then Thursday, Friday, Saturday, Sunday, Monday, &c.

The Maya year contained 365 days and consisted of two unequal parts, as follows: 360 days, or the year proper, divided into eighteen months of twenty days each; and five intercalary days, which were added at the end in order to complete the number 365.

The eighteen months were named and numbered as follows:

1. Pop; 2. Uo; 3. Zip; 4. Tzoz; 5. Tzec; 6. Xul; 7. Yaxkin; 8. Mol; 9. Chen; 10. Yax; 11. Zac; 12. Ceh; 13. Mac; 14. Kankin; 15. Muan; 16. Pax; 17. Kayab; 18. Cumhu.

FIG. 3.—Month characters.

The year always commenced with the same month—Pop—the others invariably following in the order given, so that the number of the month being given we know its name.

But eighteen months of twenty days each not completing the year, five days were added after the close of Cumhu—not as a part of that month, for no month could have either more or less than twenty days—to complete

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the number 365, and were called "nameless days" (though in reality named as other days); and were considered unlucky.

If the year began with Kan, the last day of the eighteenth month—Cumhu—would, as a matter of course, be Akbal, the last of the twenty. The five intercalated days were named in regular order following the last of Cumhu, and in this case would be Kan, Chicchan, Cimi, Manik, and Lamat. The next—Muluc—would begin the new year. Muluc being the first day of the month, Lamat would necessarily be the last—the five added days at the end of the year would be Muluc, Oc, Chuen, Eb, and Ben, making Ix the first of the following year. Ix being the first, Ben would be the last of Cumhu, and the added days being Ix, Men, Cib, Caban, and Ezanab, Cauac would be the first of the next year, the added days would close with Akbal, and the following year commence with Kan. It will be seen from this, that the year always commenced with one of the four days, Kan, Muluc, Ix, Cauac, following each other regularly in the order given.

If these were all the peculiarities of the system, the Maya calendar would be comparatively simple and easily understood.

But another method of numbering the days was introduced, doubtless long after the calendar had assumed a regular form, and probably by the priests, for the purpose of complicating it and rendering it as far as possible unintelligible to the people. This was to limit the number to thirteen, or, in other words, to divide the year into periods of thirteen days. I have followed other modern authors in calling this period a week, though it appears the Mayas gave it no name, nor in fact do they seem to have considered it a period, but simply a method of numbering the days and years. As there were twenty names of days to be used, the introduction of this system of thirteen numerals, as the one chiefly adopted in giving dates, necessarily greatly complicated the calendar, and, together with the intercalation of the five days at the end of the year, produced some singular results.

To illustrate this I give first a list of days for one month (Table No. I) numbered according to this system, following it with a table (No. II) numbered in the same way for an entire year—something after the manner of our common counting-house calendar.

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TABLE I.

1. Kan.	6. Muluc.	11. Ix.	3. Cauac.
2. Chicchan.	7. Oc.	12. Men.	4. Ahau.
3. Cimi.	8. Chuen.	13. Cib.	5. Ymix.
4. Manik.	9. Eb.	1. Caban.	6. Ik.
5. Lamat.	10. Ben.	2. Ezanab.	7. Akbal.

TABLE II.

Names of the months.	Pop.	Uo.	Zip.	Tzoz.	Tzec.	Xul.	Yaxkin.	Mol.	Chen.	Yax.	Zac.	Ceh.	Mac.	Kankin.	Muan.	Pax.	Kayab.	Cumhu.	Numbers of the days.
Numbers of the months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Names of the days.																			
Kan.....	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	1
Chicchan...	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	2
Cimi	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	3
Manik.....	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	4
Lamat	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	5
Muluc.....	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	6
Oc	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	7
Chuen.....	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	8
Eb	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	9
Ben	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	10
Ix	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	11
Men.....	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	12
Cib	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	13
Caban	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	14
Ezanab	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	15
Cauac.....	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	16
Ahau.....	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	17
Ymix	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	18
Ik	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	19
Akbal.....	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	20

Intercalated days.		
	Kan	10
	Chicchan	11
	Cimi	12
	Manik	13
	Lamat	1

It will be seen by examining this table, the year in this case commences with Kan, the other nineteen days following in regular order as heretofore given. They are numbered regularly from *one* until we reach *thirteen*, then we commence again with *one*, the month ending with Akbal 7.

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The second month—Uo—begins with 8 Kan; when we reach 13, which is now Muluc, we must follow it with 1 Oc, and so on to the end of the year. The last day of Cumhu in this case will be 9 Akbal and the last of the five intercalated days 1 Lamat; it follows therefore that the first day of the next year will be 2 Muluc. If we run through this second year in the same way, commencing it with 2 Muluc followed by 3 Oc, 4 Chuen, and so on, we shall find that the third year will begin with 3 Ix; continuing this process we ascertain that the fourth commences with 4 Cauac, the fifth with 5 Kan, the sixth with 6 Muluc, the seventh with 7 Ix, the eighth with 8 Cauac, the ninth with 9 Kan, the tenth with 10 Muluc, the eleventh with 11 Ix, the twelfth with 12 Cauac, the thirteenth with 13 Kan, the fourteenth with 1 Muluc, the fifteenth with 2 Ix, and so on. From this we see that no year, after the first, commences with a day numbered 1 until thirteen have been completed, thus forming a period of 13 years, or as it is designated, "A week of years" or "Indication." By continuing the above process we shall find that no year will again commence with 1 Kan until 52, (or 13×4,)—are completed.

TABLE III.

KAN TABLE.

Kan.	Muluc.	Ix.	Cauac.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1*	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

TABLE IV.

CAUAC TABLE.

Cauac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1*
2	3	4	5
6	7	8	9
10	11	12	13

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In order to make this as plain as possible I will give here a table of years for one cycle of 52 years. As there is some doubt as to which of the two years—1 Kan or 1 Cauac—the cycle began with, I give tables (Nos. III and IV) for both.

By this time the reader is sufficiently conversant with this sytem to know that if the cycles commence with 1 Kan, as in the left-hand table (No. III), the year following 13 Cauac would be 1 Kan and the commencement of another cycle. If the true method were as given in the right-hand table (No. IV), then 13 Ix would be followed by 1 Cauac, the first year of the next cycle. This follows, as will readily be seen, from the fact that 52 is the least common multiple of 4 and 13.

The importance of knowing which one of these arrangements was that used by the Mayas will be apparent from the following illustration: A certain event is dated a particular day in the year 1 Ix; if the table we have headed 1 Kan be correct it would then be in the 27th year of the cycle; if the other be the true method it would then be in the 40th year of the cycle, or thirteen years later. These years are marked with a star in Tables III and IV.

As this system admits of fifty-two changes in the day on which the year begins, it would require fifty-two different calendars to cover one cycle, just as fourteen calendars are required to suit all the years of our system, seven for the ordinary years and seven for the leap-years. As it would require much time and space to write these out in full, I have adopted the expedient shown in the following table (No. V), of abbreviating the work.

First we have at the left four columns, each containing the names of the twenty days of the month. As I am inclined to believe that the author of the manuscript adopted the system which had Cauac as the first day of the cycle, the first or left-hand column commences with this day, the others, Kan, Muluc, and Ix, following in the order in which they are found in the list of days. The first column is therefore the one to be used for all the Cauac years; the second for all the Kan years; the third for all the Muluc years, and the fourth for all the Ix years. The reader must be careful to remember, that when one day of the month is determined it determines all

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the rest, and as a consequence all the rest of the year; therefore when we find what the first day of the year is, we can easily determine any day of any month. As each of the four leading days or "year-bearers," as they were called by the Mayas, can have but thirteen different numbers it is unnecessary to extend our columns of numbers further than thirteen.

TABLE V.

Cauac column.	Kan column.	Muluc column.	Ix column.	1 14	2 15	3 16	4 17	5 18	6	7	8	9	10	11	12	13	Nos. of the months.
																	Days of month.
Cauac	Kan.....	Muluc.....	Ix.....	1	8	2	9	3	10	4	11	5	12	6	13	7	1
Ahau	Chicchan...	Oc	Men.....	2	9	3	10	4	11	5	12	6	13	7	1	8	2
Ymix.....	Cimi	Chuen.....	Cib.....	3	10	4	11	5	12	6	13	7	1	8	2	9	3
Ik	Manik	Eb	Caban.....	4	11	5	12	6	13	7	1	8	2	9	3	10	4
Akbal	Lamat.....	Ben	Ezanab.....	5	12	6	13	7	1	8	2	9	3	10	4	11	5
Kan	Muluc	Ix.....	Cauac	6	13	7	1	8	2	9	3	10	4	11	5	12	6
Chicchan ...	Oc.....	Men.....	Ahau.....	7	1	8	2	9	3	10	4	11	5	12	6	13	7
Cimi.....	Chuen.....	Cib.....	Ymix	8	2	9	3	10	4	11	5	12	6	13	7	1	8
Manik	Eb	Caban.....	Ik.....	9	3	10	4	11	5	12	6	13	7	1	8	2	9
Lamat.....	Ben	Ezanab.....	Akbal.....	10	4	11	5	12	6	13	7	1	8	2	9	3	10
Muluc	Ix.....	Cauac	Kan.....	11	5	12	6	13	7	1	8	2	9	3	10	4	11
Oc	Men.....	Ahau.....	Chicchan...	12	6	13	7	1	8	2	9	3	10	4	11	5	12
Chuen	Cib.....	Ymix	Cimi	13	7	1	8	2	9	3	10	4	11	5	12	6	13
Eb..... ..	Caban.....	Ik.....	Manik.....	1	8	2	9	3	10	4	11	5	12	6	13	7	14
Ben.....	Ezanab.....	Akbal.....	Lamat.....	2	9	3	10	4	11	5	12	6	13	7	1	8	15
Ix	Cauac	Kan.....	Muluc.....	3	10	4	11	5	12	6	13	7	1	8	2	9	16
Men	Ahau	Chicchan...	Oc.....	4	11	5	12	6	13	7	1	8	2	9	3	10	17
Cib	Ymix	Cimi	Chuen.....	5	12	6	13	7	1	8	2	9	3	10	4	11	18
Caban	Ik.....	Manik	Eb	6	13	7	1	8	2	9	3	10	4	11	5	12	19
Ezanab	Akbal.....	Lamat.....	Ben	7	1	8	2	9	3	10	4	11	5	12	6	13	20

By referring to the table No. II of days and months we observe that when we have completed the thirteenth column, or the column of the thirteenth month, the next, or fourteenth month, commences with 1; just as the first month; the fifteenth with 8, as the second; the sixteenth with 2, as the third; the seventeenth with 9, as the fourth; and the eighteenth with 3, as the fifth. Instead therefore of having eighteen columns in our table, we need extend it only so as to include the thirteenth, as we can use the first, second, third, fourth, and fifth for the fourteenth, fifteenth, sixteenth, seventeenth, and eighteenth months respectively, as indicated by the numbers of the months which we have placed above the table over the figure

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columns. The reader must bear in mind that, although we have numbered the months as commencing with the left-hand column, which has 1 for its upper figure, yet this only holds good when the year is 1 Cauac, 1 Kan, 1 Muluc, or 1 Ix, and for none of the other years. The first month of the year may be any one of the thirteen columns, thus: 8 Cauac, 8 Kan, 8 Muluc, and 8 Ix have the second column, which has 8 for its upper figure, as their first month; then the one commencing with 2 will be the second month column, that with 9 the third, with 3 the fourth, with 10 the fifth, with 4 the sixth, with 11 the seventh, with 5 the eighth, with 12 the ninth, with 6 the tenth, with 13 the eleventh, the last or one commencing with 7 the twelfth. Now we go back to the first—commencing with 1—which will be the thirteenth, with 8 the fourteenth, with 2 the fifteenth, with 9 the sixteenth, with 3 the seventeenth, with 10 the eighteenth. Thus we count through and go back to the left, and so continue until we reach the number of the month desired. We will now illustrate the use of this table by some examples, but first we must warn the reader not to confuse *the day of the month with the day of the week;* the numbers of the days of the month are given in the extreme right-hand column of the table, which is not counted as one of the thirteen; the days of the week, as heretofore stated, are always given thus: 3 Ymix, 12 Caban, 7 Oc, &c.

Now, to illustrate the method of using the table, let us find in what months and on what days of the months in the years 11 Cauac, 11 Kan, 11 Muluc, and 11 Ix, the day 8 Ahau will fall. For the year 11 Cauac we must look to the Cauac column. We find here that Ahau is the second day of the month; running our eyes along the second transverse line, we find the figure 8 in the thirteenth column, which has 7 as the top number; going back to the column which has 11 as the upper or top number and counting the columns up to this (that has 7 as the top number), we find it to be the sixth month. We thus ascertain that 8 Ahau of the year 11 Cauac is the second day of the sixth month. To find where it falls in 11 Kan we must first find Ahau in the Kan column. By running our eyes down this column we see that it is the 17th day of the month; then, by looking along the 17th transverse line we find the figure 8 to be in the column which has 5 at the top, which is the second or fifteenth from that with

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11 at the top. Therefore 8 Ahau of the year 11 Kan is the 17th day of the second and also of fifteenth month.[1]

In the same way we ascertain that 8 Ahau of the year 11 Muluc is the twelfth day of the twelfth month, but in this case we have to count the columns from the one commencing with 11 (always inclusive) to the right, through to the thirteenth (the one with 7 at the top), and go back to the first and count up to the one in which we find the figure 8 in the twelfth transverse line. We also find that 8 Ahau of the year 11 Ix is the seventh day of the ninth month.

If I have succeeded in making this complicated system thus far intelligible to the reader, I may hope to succeed in conveying a correct idea of what is to follow.

Now let us test our arrangement by a historical example. In the Perez manuscript translated by Stephens and published in his "Yucatan," Vol. II, it is stated that one Ajpula died in the year 4 Kan, the 18th day of the month Zip, on 9 Ymix.

The year 4 Kan commences with the column of our table which has 4 for the top figure. The third month (Zip) will then be the column with 5 at the top; running down this to the eighteenth transverse line we find the figure 9; we also observe that the 18th day in the Kan column of the names of days is Ymix, agreeing exactly with the date given.

In the manuscript Troano there is another method of giving dates which is very common throughout the work. Thus:

FIG. 4.

which, according to my interpretation, the reasons for which will be hereafter given, signifies 13 Ahau of the thirteenth month.

As neither the year nor the day of the month is given, it is evident that we may find more than one day answering to this date, but let us hunt them out and see where they fall. Referring to our table we will first take the Ahau of the Cauac column, which is in the second transverse line; the 13 in

[1] The reader can readily see from the table why any day found in the *first, second, third, fourth,* or *fifth* month will be found *twice* in the year.

[2] As colors cannot be introduced into these figures, the red numerals will be represented in outline.

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this line we observe is in the tenth column (12 at top); counting *back* thirteen months (always including the one from which we start), we find that the first month of the year is the column having 6 at the top. The backward counting is exactly the reverse of the forward method heretofore explained; count to the left until the first column is reached, then go back to the thirteenth.

We thus ascertain that 13 Ahau of the 13th month falls on the second day of the month in the year 6 Cauac. Proceeding in the same way with the Ahau in the Kan, Muluc, and Ix columns, we obtain the seventeenth day of the month in the year 4 Kan, twelfth in 9 Muluc, and seventh in 1 Ix. We thus ascertain that the years are 6 Cauac, 4 Kan, 9 Muluc, and 1 Ix.

If we examine Table III, showing the years of the cycle, we shall find as a matter of course that these years occur but once in the entire period.

In order apparently to further complicate this calendar, which was undoubtedly devised by the priests, as Landa says, "to deceive that simple people," another period called the Ahau or Katun was introduced. This period, according to most authorities, consisted of twenty years, but according to Perez of twenty-four. It is in reference to this period that we find the chief difference between authorities, because upon the proper determination of its length, and the numbering, depends the possibility of identifying dates of the Maya calendar with corresponding ones of the Christian era. In order to settle these points it is necessary not only to determine the length of the Ahau or Katun, but also the number of Katunes contained in the great cycle, the method in which they were numbered, and the proper position of these numbers in this long period. Up to the present time these are the rocks on which all the calculations have been wrecked. My chief object, therefore, so far as the calendar is concerned, will be to settle if possible these disputed points; but will defer the discussion of these questions to a subsequent part of this paper, remarking only for the present that, according to all authorities, these Katunes were numbered as follows, and in the order here given: 13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2; this number completing the great cycle or Ahau-Katun,[1] which consisted of 260 years if the

[1] I use this compound term for the grand cycle only. *Katun* and *Ahau* are used separately as equivalents and as applying only to the period of 20 or 24 years; *Cycle* for the period of 52 years.

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Katun included only 20 years, but of 312 if it contained 24 years, as maintained by Perez.

We are now prepared to discuss the question presented as to whether the numerals and day characters found so frequently in connection with each other are simply dates, somewhat as we find them in our ordinary calendars, or not. The first point to be determined is whether these day characters are used simply to denote days, or because of the signification of the words, as Brasseur supposed. This, as will be readily perceived, also involves the important question as to whether Landa was correct in his statement, that they were the symbols or characters used to denote days.

The argument must therefore be somewhat in a circle; hence the evidence adduced must be strong to support the position assumed, and must agree in the essential points with the Maya calendar so far as positively determined.

In order to decide this point we now turn to the manuscript itself.

Referring to Plate X we find that the left-hand column of the middle division (always reading from the top downwards) is composed of the characters representing the following Maya days, in the order here given: Oc, Cib, Ik, Lamat, Ix. If we turn to Table V, containing the list of days, and count on either of the four columns of names, from one of these names to the next, we shall find in each case an interval of just six days; from Oc to Cib six days; from Cib to Ik six days, and so on. The other column, same plate and division, is composed of the characters for Ahau, Cimi, Eb, Ezanab, and Kan, with an interval of six days between each two. Turning now to Plate VI, middle division, we find the days in the left-hand column to be Caban, Ik, Manik, Eb, and Caban, with an interval of just five days between each two. In the upper division of Plate XVII the interval is twelve days; and the same is true in reference to the other columns on this plate. In the left-hand column of the third division of Plate XXXI the interval is sixteen days.

Although the interval is generally the same throughout a column, yet there are occasional departures from this rule; for example, on Plate XIII, the left-hand column of the upper division is composed of the characters for

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the following days: Kan, Oc, Cib, Ahau, and Ik. From Kan to Oc is an interval of six days; from Oc to Cib six; from Cib to Ahau four; from Ahau to Ik two

Here we may be allowed to digress for a moment from the direct line of our argument in order to show how the discovery of this fact may enable us to determine an uncertain or obliterated character.[1] The right-hand column of the middle division of this plate (XIII) contains an unusual character bearing little if any resemblance to any of Landa's day characters. The days of this column, in the order they stand, are as follows: Oc, Ik, Ix, , and Ezanab. From Oc to Ik is an interval of twelve days; from Ik to Ix twelve days; from Ix to ?(Cimi) twelve days, and from Cimi to Ezanab twelve days. We may therefore feel pretty well assured that this unusual character is a variant of Cimi[2] and not of Ahau, as Brasseur supposed.[3]

The right-hand column of the lower division of the same plate contains the same unusual character which, if counted as Cimi, gives an interval of six days between each two.

This regularity in the order of the days is sufficient to prove, beyond any reasonable doubt, that they were not used on account of the signification of the words. In some cases the combination, if interpreted according to the usual meaning of the words, may, by a somewhat strained interpretation, be formed into a sentence, but such cases are exceedingly rare, only one having, so far, been observed, and here it is purely accidental.

The agreement between the characters found in the Manuscript and the order of the days as found in the Maya calendar is also a strong proof that Landa was correct in the characters assigned and in the order of the days as he has given them. It would be impossible to find such a large number of agreements—more than 200 columns and over 1,000 days—if Landa were wrong in either respect, or if we were wrong in our interpre-

[1] This was written before I had seen Charency's papers on this subject.

[2] In a plate of the "Book of Chilan Balam of Káua," copied by Dr. Brinton in his article on the Books of Chilan Balam, presented to the Num's. and Antiq. Soc. of Phila., Jan., 1882, p. 16, one character for Lamat differs from this only in the middle stroke sloping to the left instead of to the right as this does. Leon de Rosny (Essay Dechiff. Ecrit. Hierat., 1st Livr., 17) interprets it as I do.

[3] Nor of Caban as interpreted by Charency (Dechif. des Ecrit. Calcul, Mayas, &c., 1879, p. 26).

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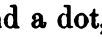
tation. I shall therefore consider the following points settled, and shall henceforth proceed upon that basis:

1st. That the Manuscript is a Maya document.

2d. That Landa has given the order of the days and their symbols correctly.

3d. That the day characters in these columns are used simply to indicate the days they represent, and not the signification of the words.

It is now generally conceded by all who have studied these hieroglyphics that the Maya method of designating numbers was by the use of lines and dots, thus: one dot signifying 1, two dots 2, and so on up to 4; that five was represented by a single short straight line; ten by two lines, and so on. According to this system, a straight line and a dot, thus  would signify 6; two straight lines and two dots, thus , would stand for 12.

As heretofore remarked, these numeral characters are found on every page of the manuscript, and if we judge by the color, some being red and others black, they belong to two different classes, or at least are used for two different purposes. As they are generally associated with the day characters, the latter in fact never being without them, the natural inference is that they are used to denote dates.

As there are two classes, it is not probable that more than one of these is used to number the days.

If we examine the red numerals on all the plates of the manuscript, we shall find that—except on the title-page, which is evidently peculiar—they never indicate a greater number than 13 (there is one apparent exception where the number appears to be fourteen, but the additional dot is imperfect, and is either a blotch or evident mistake). In some places we find such red numerals as this , apparently denoting 14, but a more careful study of the plates on which these are found satisfies me that there are two numbers here, 13 and 1. From this fact I infer that the red numerals are used here to designate the days or years of the Maya week, which, as I have shown, consisted of thirteen days or years, especially in the computation of time in reference to religious feasts and ceremonies.

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But there is still stronger evidence on this point, which I will now introduce.

For this purpose I will have to ask the reader to observe carefully our colored Plates I, II, III, and IV, which are exact copies of XX–XXIII of the Manuscript. He will notice that the extreme left-hand column of Plate IV (Man. XXIII) contains only the character for Cauac, which is repeated thirteen times, and that over each is a red numeral. Near the top are certain other characters with which we have nothing to do at present.

TABLE VI.

Cauac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

TABLE VII.

Kan.	Muluc.	Ix.	Cauac.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

Commencing with the upper Cauac and moving down the column we find the numbers over them, so far as they can be made out, as follows: 10, 1, 5, 9, 13, 4, 8, 12, (?), 7, (?), 2, 6. If these numbers relate here to the days of the week, why this peculiar order? If we refer to Table II of the days of the months and year, and run our eyes along the transverse line opposite Cauac, we shall find the order to be as follows: 1, 8, 2, 9, 3, 10, 4, 11, 5, 12, 6, 13, 7, wholly different from what we see here. If we construct a table of years similar to those already given (III and IV), but extended over two complete cycles of 52 years each, we shall be able to explain this mystery. We give here, for the reasons here-

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tofore stated, two tables, one with Cauac as the initial day (VI) and the other with Kan (VII). Running our eyes down the Cauac column of either table to 10, we find thirteen numbers from this downwards, as follows, and in the order here given: 10, 1, 5, 9, 13, 4, 8, 12, 3, 7, 11, 2, 6, precisely as they are on the plate of the manuscript.

On Plate XXII (our Plate III) the repeated character of the left-hand column is Kan, the numerals over which (reading from the top downwards) are as follows: 11, 2, 6, 10, 1, 5, 9, (?), 4, 8, 12, 3, 7, 11, precisely the same and in the same order as we find them in the Kan column of our tables; the obliterated one being, as we see from this, 13. On Plate XX (our Plate I) the repeated character of the left-hand column is Ix. The numbers here, so far as they can be made out, are 13, (?), 8, 12, 3, 7, 11, 2, 6, 10, 1, 5, 9, precisely the same and in the same order as in the Ix column of our tables.

The repeated character on Plate XXI (our Plate II) is Muluc; the numbers are 12, 3, 6, 10, 1, 5, 9, 13, 4, 8, 2, 7, 3. If we compare these with the Muluc column of our tables, we find that after the first two numbers there is a skip of three numbers before we reach the 6 which should follow according to the plate. But what appears here as a contradiction of my supposition is, as I believe, the strongest evidence of its correctness. If we examine the tables carefully we will observe that after reaching the second figure,—3,—in the Muluc column, the next figure in the adjoining column is 6, and from thence to 8 the same as on the plate. From this I am led to believe the writer had before him a table similar to those I have given, except that it was written in their numeral characters, and that, by mistake in copying, his eye fell on the wrong column. That such tables were used by them is rendered probable by the following quotation which Perez makes from an ancient manuscript in his possession: "They had another number which they called *Ua Katun*, which served them as a key to find the Katunes and according to the order of their march, it falls on the two days of the *Uayebhaab* and revolves to the end of certain years: Katunes 13, 9, 5, 1, 10, 6, 2, 11, 7, 3, 12, 8, 4." By commencing at the bottom of the right-hand column of either table of years and running up we find precisely these numbers and in the order given. It is scarcely possible these could have been obtained except by a table similar to those I have given.

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We know that tables of days of this form are to be found in some two or three of the Mexican Codices; something similar is also to be found in the Dresden Codex, and by placing the columns of these four plates of the Manuscript side by side we will have just such a table.[1]

But be this as it may, the exact agreement in the other three columns, and the fact that the years named and numbered appear to belong to *one continuous period of time*—an all-important point in this connection—show, as we think, conclusively that our explanation of these numerals and the day characters, and of the use here made of them, is correct. If so, then the red numerals are used to number the days and years of the week, or, in other words, to number the days and years exactly as the various writers have stated was the usual custom. We have marked this period on the tables of years with waved lines so as to be seen at a glance, as we shall have occasion hereafter to refer to it.

As further proof that these red numerals are limited to the thirteen series, I now call attention to certain short columns found in the middle division of Plates VII*–X*. These consist of three days each—Cib, Caban, and Ezanab—and each day has a numeral over it, as follows (I give here the exact order in which they stand on the plates, although I have doubts as to the correctness of Brasseur's paging):

6.	13.	4.	11.	5.	12.	2.
Cib.	Cib.	Cib.	Cib.	Cib.	Cib.	Cib.
7.	1.	5.	12.	6.	13.	3.
Caban.	Caban.	Caban.	Caban.	Caban.	Caban.	Caban.
8.	2.	6.	13.	7.	1.	4.
Ezanab.	Ezanab.	Ezanab.	Ezanab.	Ezanab.	Ezanab.	Ezanab.

[1] Since the above was written, I have been so fortunate as to procure a copy of Leon De Rosny's *Essai sur le Déchiffrement de L'Ecriture Hieratique de L'Amerique Centrale*, in which I find a copy of a plate of the CODEX CORTESIANUS, and also of one plate of the CODEX PERESIANUS. In the former is part of a table of days arranged precisely as in my table, except that they are placed horizontally, as here shown, instead of in columns:

Muluc.	[illegible] c.	Chuen.	Eb.	Been.	Ix.	Men.	Cib.	Caban.
Ix.	Men.	Cib.	Caban.	Ezanab.	Cauac.	Ahau.	Imix.	Ik.
Cauac.	Ahau.	Ymix.	Ik.	Akbal.	Kan.	Chicchan.	Cimi.	Manik
Kan.	Chicchan.	Cimi.	Manik.	Lamat.	Muluc.	Oc.	Chuen.	Eb.

Whether or not this fragment contains the commencement, I am unable to say; that it does not contain the conclusion, I am satisfied. We have here proof that the order when in lines is from the left to the right. The other plate (from the Codex Peresianus) contains a column similar to those in the four plates of the Manuscript Troano, but here the repeated day (*Been*) is the last of one of the years as in the Dresden Codex.

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9.	3.	10.	7.	1.	8.
Cib.	Cib.	Cib.	Cib.	Cib.	Cib.
10.	4.	11.	8.	2.	9.
Caban.	Caban.	Caban.	Caban.	Caban.	Caban.
11.	5.	12.	9.	3.	10.
Ezanab.	Ezanab.	Ezanab.	Ezanab.	Ezanab.	Ezanab.

If we turn to our condensed calendar, Table V, we see that these three days follow each other as shown here, and by examining the different columns we can find all the numbers here given. This fact, together with the method of numbering, is sufficient of itself to establish the correctness of the opinion I have advanced in reference to these red numerals.

That they are here used to number the days is evident from the fact that they are applied to those days which are never used to name the years. From what has been shown in reference to Plates XX–XXIII (our Plates I, II, III, and IV) we see that they are also used to denote the years of the week or "Indication."

The next point to be determined is the use of the black numerals. Here we shall find the task more difficult, but it is necessary to determine this before we can proceed in our effort to fix the dates, which are given in great numbers in the Manuscript, and by means of which we hope to settle the disputed points in regard to the calendar.

I shall at present omit any reference to the "title-page," which, as I have said, is peculiar, and cannot therefore be used in the present investigation. As we find repeatedly throughout the work black numeral characters denoting 14, 15, 16, 17, and 18, it is evident they do not refer to the days or years of the week. They must therefore be used to denote the numbers of the *months*, or of the *days* of the *months*. That they are not used to number the Ahaues or the years of these periods is evident from the fact that these are always numbered by the thirteen series, or, in other words, never have applied to them any number exceeding 13; the years are also designated by the four days Cauac, Kan, Muluc, and Ix.

But in order that the reader may see clearly the difficulty of deciding this point satisfactorily it will be necessary for me to illustrate it by examples from the Manuscript.

As before mentioned, the day characters are nearly always in columns—

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usually of five characters each—at the left of the compartments or spaces, each column usually with a red numeral over it. For example, in the lowest division of V* the column consists of five characters, as shown here (Fig. 5), which denote the days (reading from the top downward) Oc, Ik, Ix, Cimi, and Ezanab. The red numeral at the top is 9. The black numeral at the side in the space is three lines or 15. (In this case there is but one of these black numerals in the space or compartment, but usually there are several, and also several red ones.) Now, I take for granted that placing the red numeral at the top of the column is equivalent to applying it to each day in the column, thus: 9 Oc, 9 Ik, 9 Ix, 9 Cimi, and 9 Ezanab. There is also one red numeral—13—in the space, as shown in the annexed cut.

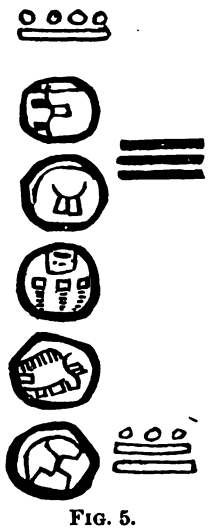

FIG. 5.

Leaving this last out of consideration for the present, let us proceed upon the supposition that the black numeral signifies *the day of the month.* Examining our condensed calendar (Table V), we see that of the five days Ezanab is the only one that ever falls on the 15th of the month. As this will be found true of at least two columns out of every three throughout the Manuscript it is apparent that these numerals are not used here for this purpose; but even could all be found on the proper day of the month we would still be without any fixed date. Take, for instance, Ezanab in this case, which does fall on the 15th day of the month in the years commencing with Kan; the figure 9 in the fifteenth transverse line is found in the second column. What month? In the year 1 Kan it is in the second month, in the year 8 Kan it is in the first month, in the year 2 Kan it is in the thirteenth month, and so on throughout the thirteen Kan years. Some may contend that it was not the intention to fix the years, as this is possibly the date of some feast or religious ceremony to be observed each year. I answer that, laying aside the insuperable objection already given, even this supposition would be erroneous—first, because in the case before us Ezanab falls on the 15th day of the month only once every four years, and with each year the month is changed. But it is unnecessary to discuss this

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supposition further, as not one day out of three ever falls on the day given if these black numerals denote the days of the month.

We will next proceed on the supposition that these indicate the months. In that case the dates given in the present example will be 9 Oc, 9 Ik, 9 Ix, 9 Cimi, and 9 Ezanab of the 15th month (Muan). In this the feast, religious ceremony, or whatever the date refers to, occurs always in the same month, and so far agrees with what is left on record in reference to religious ceremonies and observances. As only the day and month are given, it is possible, as heretofore stated, to find four dates to each day. Now, let us hunt out, by the use of our condensed calendar, the years on which these several dates fall. Commencing with 9 Oc, we look first for this day in the Cauac column; having found it to be the twelfth day of the month, we run our eyes along the twelfth transverse line of figures until we reach the figure 9, which we find to be in the eighth column (the one with 11 at the top); counting back fifteen months (including the one 9 is in) we reach the column with 4 at the top The year is therefore 4 Cauac. We next find Oc in the Kan column; it is here the seventh day of the month, and 9 is in the fifth column (the one with 3 at the top); counting back fifteen months (going towards the left until we reach the first column, and then to the thirteenth, and moving back toward the left), we reach the fourth column (with 9 at the top). The year is therefore 9 Kan. We next find Oc in the Muluc column, and by the same process obtain the year 1 Muluc. Next we find Oc in the Ix column, and by the same process ascertain the year to be 12 Ix.

Pursuing the same method with the other days, we obtain the following result:

	9 *Oc.*	9 *Ik.*	9 *Ix.*	9 *Cimi.*	9 *Ezanab.*
Years....	4 Cauac.	12 Cauac.	13 Cauac.	8 Cauac.	9 Cauac.
Years....	9 Kan.	10 Kan.	5 Kan.	13 Kan.	1 Kan.
Years....	1 Muluc.	2 Muluc.	10 Muluc.	11 Muluc.	6 Muluc.
Years....	12 Ix.	7 Ix.	2 Ix.	3 Ix.	11 Ix.

Now, let us construct a table (No. VIII) of years for one cycle, as this includes all possible variations in the numbers and names of the years, and see where those obtained will fall. Marking each of the years with a star, we find that they belong to one continuous period. So far the result is favorable, and what will probably attract the attention of those who have

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devoted some time to the study of this subject is the fact that the period embraced is precisely that which is supposed by most authorities to constitute one Ahau. But let me here warn such reader against a too hasty conclusion.

Supposing we are so far correct, what use are we to make of the red numeral—13—in the space? Let us suppose that it is also to be applied to the days as the other red numeral, using the same month. This gives us the following years:

	13 *Oc.*	13 *Ik.*	13 *Ix.*	13 *Cimi.*	13 *Ezanab.*
Years....	8 Cauac.	3 Cauac.	4 Cauac.	12 Cauac.	13 Cauac.
Years....	13 Kan.	1 Kan.	9 Kan.	4 Kan.	5 Kan.
Years....	5 Muluc.	6 Muluc.	1 Muluc.	2 Muluc.	10 Muluc.
Years....	3 Ix.	11 Ix.	6 Ix.	7 Ix.	2 Ix.

If we attempt to locate these in the same cycle as the preceding period, we shall find that the two clash with each other—that is, that some of the years of the first are the same as some of the second; but it is evident they may be located in another cycle.

TABLE VIII.

Cauac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9*	10*	11*	12*
13*	1*	2*	3*
4*	5*	6*	7*
8*	9*	10*	11*
12*	13*	1*	2*
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

Before proceeding further with the discussion of this difficult question, we must remind the reader of what possibly he has already inferred—that in our allusion to the "intervals" between the days of the columns, our object then was simply to show a regularity not consistent with the idea that they were used on account of the signification of the words, and not to lead him to suppose that the real interval intended was only the number of days mentioned. We also wish to call his attention to another fact which is becoming more and more apparent as we proceed—that the regularity of the intervals which seems apparent, whatever may be our final conclusion as to what the black numerals refer to, and the great number of dates as compared with the text, preclude the supposition that the work is historical. I shall therefore proceed upon the theory that it is, to a large extent at least, a kind of religious calendar—not with any particular desire to maintain this opinion,

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but simply because I find the evidence pointing in this direction, and also that it is next to impossible to advance farther without having some theory.

TABLE IX.

Cauac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1*	2*	3*
4*	5*	6*	7*
8*	9*	10*	11*
12*	13*	1*	2*
3*	4*	5*	6*
7*	8	9	10
11	12*	13*	1*
2*	3*	4*	5*
6*	7*	8*	9*
10*	11*	12*	13*
1*	2*	3*	4*
5*	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11

From what has been shown it is apparent that the interpretation I have given is a possible one, the chief objections to which are, *first*, the large number of dates in the Manuscript that this plan would give us, which, according to a rough calculation I have made, would amount to something like ten thousand; *second*, the extent of time these dates must necessarily cover, which cannot be less than one great cycle of 312 years.

The Dresden Codex, which is evidently similar in character to the Manuscript Troano, presents, if possible, still greater difficulties to the settlement of this question, as here we find the black numeral for 19 frequently connected directly with the red ones. But so far as I have examined dates of this kind they do not appear to be necessarily associated with the day characters on the same page. In this codex the dates are also much more numerous than in the Tro. Ms., a number of pages being filled almost exclusively with numerals and day characters. Month characters are also introduced; hence it is probable the *day of the month* is often given.

On page II (Tro. Ms.), in the left column, middle division (see fig. 99), the days (counting from the top downwards) are Manik, Cauac,[1] Chuen, Akbal, Men, the red numeral over the column 1. In the space are three black numerals 6, 11, and 9, also two red ones 10 and 3. Using the red 1 and the black 6, as heretofore, we find the years to be as follows:

	1 *Manik.*	1 *Cauac.*	1 *Chuen.*	1 *Akbal.*	1 *Men.*
Years....	10 Cauac.	5 Cauac.	6 Cauac.	1 Cauac.	2 Cauac.
Years....	2 Kan.	3 Kan.	11 Kan.	12 Kan.	7 Kan.
Years....	13 Muluc.	8 Muluc.	3 Muluc.	4 Muluc.	12 Muluc.
Years....	5 Ix.	13 Ix.	1 Ix.	9 Ix.	4 Ix.

The period is found to be continuous, and is surrounded on the annexed table (No. IX) by a continuous dark line. In this case it commences with

[1] Cauac is represented here by an unusual character.

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Kan. If we use the red 3 and the black 6 the result will be as shown in the group surrounded on the table by the dotted line. As the reader is perhaps by this time aware, it might be located below the first by extending the table, but still would give us no clue to the proper position of the Ahaues.

There are two other possible suppositions, to wit: that the red numeral over the column refers to the number of the Ahau, and that in the space to the number of the days; and, second, just the reverse of this, that the red number in the space refers to the Ahau and that over the column to the number of the days, the black one in each case denoting the number of the month.

As it will be impossible for us to decide in reference to these suppositions until we can locate the Ahaues and determine their numbers, I will postpone further discussion of the point for the present, proceeding for the time being upon the only plan so far found consistent with what is known of the Maya calendar.

As heretofore stated, the greater number of the day columns contain just five characters. Why this number? If we use the numerals as shown by the above examples, this will give us for each red numeral twenty years, agreeing with the number counted to the Ahau, whether we follow most authorities or Perez; for, according to the latter, who holds that there are twenty-four years in this period, only twenty are usually "counted"; four being generally omitted as unlucky, or for some other reason. That something of this kind, arising from the system itself, was the cause of placing five days in so many columns is more than probable. If I am correct in this supposition, it not only agrees with the method of using the numerals above suggested, but it will also determine the years that form the different Ahaues.

Following up this suggestion, let us see if it is possible to determine from the Manuscript the length of the Ahau as understood by the author.

As the most likely method of deciding this question, I will select a number of the day columns, find from them the years indicated according to the plan heretofore given, and locate them in tables of years. We can then see what relation they bear to each other.

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The first I select is found in the lower division of Plate XXVI. The column is as here shown—Fig. 6—the days are Ahau, Eb, Kan, Cib, Lamat.

FIG. 6.

In addition to these red numerals, we find in the space occupied by the figures five black and five red numerals, each thirteen. Why there should be five pairs of numerals, each denoting the same number, I confess myself unable to decide; I shall therefore leave this question to be discussed hereafter, if I find any reasonable explanation. According to the interpretation already given, the red numerals indicate the days, the black the months. Hunting out the years as in the preceding example we find them to be as follows:

	13 *Ahau.*	13 *Eb.*	13 *Kan.*	13 *Cib.*	13 *Lamat.*
Years..	6 Cauac.	7 Cauac.	2 Cauac.	3 Cauac.	11 Cauac.
Years..	4 Kan.	12 Kan.	7 Kan.	8 Kan.	3 Kan.
Years..	9 Muluc.	4 Muluc.	5 Muluc.	13 Muluc.	1 Muluc.
Years..	1 Ix.	2 Ix.	10 Ix.	5 Ix.	6 Ix.

These years are marked with a star and the group surrounded by a continuous dark line on the annexed table of years, No. X. For reasons hereafter given I adopt the system which commences the cycle with 1 Cauac.

TABLE X.

Cauac.	Kan.	Muluc.	Ix.
10	11	12*	13*
1*	2*	3*	4*
5*	6*	7*	8*
9*	10*	11*	12*
13*	1*	2*	3*
4*	5*	6	7
8	9	10	11
12	13	1*	2*
3*	4*	5*	6*
7*	8*	9*	10*
11*	12*	13*	1*
2*	3*	4*	5*
6*	7*	8	9
10	11	12*	13*
1*	2*	3*	4*
5*	6*	7*	8*
9*	10*	11*	12*
13*	1*	2*	3*
4*	5*	6	7
8	9	10	11

As Plate XXVII relates obviously to the same general subject, I select the left-hand day column of its upper division as our next example. The days are Ahau, Eb, Kan, Cib, and Lamat, the same as in the preceding example, the red or day numeral 11, the black or month numeral 13.

These give us the following years:

Days....	11 *Ahau.*	11 *Eb.*	11 *Kan.*	11 *Cib.*	11 *Lamat.*
Years....	4 Cauac.	5 Cauac.	13 Cauac.	1 Cauac.	9 Cauac.
Years....	2 Kan.	10 Kan.	5 Kan.	6 Kan.	1 Kan.
Years....	7 Muluc.	2 Muluc.	3 Muluc.	11 Muluc.	12 Muluc.
Years....	12 Ix.	13 Ix.	8 Ix.	3 Ix.	4 Ix.

These are also marked on the annexed table with a star, but the group is surrounded by a dotted line. In order to enable the reader to understand

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what I mean by "properly locating" these periods, I have extended the table so as to include one complete cycle, the close of another, and the commencement of another. I have also located this last period—as a matter of course according to the years obtained—in the only two possible positions in the table; surrounding each by a dotted line. If the table had been extended it could of course have been located in other cycles. I call attention to the fact that both these periods commence with a Muluc year, which would render it impossible for the commencement or ending of an Ahau, if these are Ahaues, to coincide with the commencement or ending of a cycle or grand cycle. If we suppose the Ahau to contain twenty-four years, and the periods marked on Table X to omit two years at the commencement and two at the close; in other words, extend the upper and lower lines bounding the groups, across the table, we will then have no difficulty in making all the periods agree with each other and with the cycles. After all, we are not yet authorized to say positively that these periods are Ahaues, or that they are even embraced in or coincide with them; still, the oft-repeated five-character day columns, and the resulting groups of years, justify us in assuming that they do at least coincide with them.

Before proceeding further in our discussion of the Manuscript it will be necessary for us to decide in reference to the following points relating to the calendar upon which we have incidentally touched:

First. The number of years contained in an Ahau.

Second. The position of these periods in the grand cycle or Ahau-Katun.

Third. The respective numbers of these periods as thus fixed in the Ahau-Katun.

Fourth. With which one of the four days (year bearers) the grand cycle begins.

That the older authorities, so far as we are aware, without exception, give 20 years as the length of an Ahau, is admitted. Landa, for example, says (in § XLI), "The Indians had not only the computation of the year and the months, but they had also a certain manner of computing the times and events by ages. This they did by 20 and 20 years, computing 13 twenties with one of the twenty letters of their month called *Ahau*, but

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without order, and alternate only as on the boundary of the wheel aforesaid."

Cogolludo (Hist. de Yucathan, Lib. IV, Cap. 5) says:

"They compute their eras and ages, which they write down in their books, by 20 and 20 years and by lustres of 4 and 4. They fix the first year at the east, to which they give the name *Cuch-haab.* The second, at the west, is called *Hiix;* the third, at the south, is named *Cauac,* and the fourth, *Muluc,* at the north. Five of these lustres being completed, make twenty years; this is what they call a *Katun.* They place a sculptured stone upon another stone, equally sculptured, fixed with lime and sand in the walls of the temples."

The Perez manuscript, as is well known, counts twenty years to an Ahau. Most of the recent writers have also decided in favor of the same number. Two or three of the most recent authorities, as Dr. Brinton, Charency, and Rosny, are disposed to follow the opinion of Perez, that it contained twenty-four years. I am satisfied that the opinion which holds twenty-four years to be the number is the correct one, and will now proceed to give the proof I have been able to obtain bearing upon this point.

First. If I am correct in my interpretation of the numerals, then the groups of years obtained by using these, as heretofore shown, will necessarily require twenty-four years to the Ahau, no matter with which of the four year-bearing days we begin the cycle; for, although these groups contain but twenty years there is an interval of four years between each two that is not counted.

Second. The method of numbering these periods cannot, as I believe, be accounted for on any other supposition. According to all authorities who have mentioned the subject they were numbered, as I have already stated, thus: 13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2, the number 13 being the first, 11 the next, and so on. It is not reasonable to suppose that this singular series was wholly an arbitrary selection; on the contrary, it is more than probable that it was obtained in some way through the use of the "13 series." If we examine the table of years, No. XVII, we will see that, commence where we may, and divide it into periods of twenty-four years by transverse lines, the first years of these periods taken in the order they come will accord exactly with this series. Take for example the

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Ahaues as there given: the first commences with the year 1 Cauac, the second with 12 Cauac, the third with 10 Cauac, and so on. As the great cycle contains thirteen of these periods, it follows that we shall find all these numbers in it by thus dividing it. It is true this does not prove that the first period was numbered 13; moreover it is possible (though I do not think probable) that the number was not taken from that of the first day of the year, but from the second, as suggested by Perez. According to the theory advanced by this author these periods were numbered from the second day of the Cauac years, which would necessarily be Ahau, because, as he supposes, some notable event in their history occurred on that day. Even on this supposition the series could not commence with the first period of the grand cycle, as this would be Ahau No. 2, but would begin with the second, which would be Ahau No. 13.

It may not be improper to call attention at this point to a remark made by Dr. Valentini in his article on the Perez manuscript (Proc. Am. Ant. Soc. No. 71): "Nor do we understand the reason why, just here, the topic of the succession of the numbers 13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2, was introduced. Could it have been with the intention of showing that this singular enumeration of alternating Ahaues, which we shall hereafter speak of, occurred only in cycles of twenty-four years, and that therefrom a proof might be derived for establishing the pretended cycle of twenty-four and three hundred and twelve years? Evidence of this should have been given by a table showing the series, and by still another table in which should be shown that such an alternating succession did not occur in cycles composed of twenty years. Not one single fact can be detected in Señor Perez's text by which the long established assumption of a twenty years' cycle has been disproved."

The object Señor Perez had in view in introducing this series at this point was for the very purpose of showing that this "singular enumeration" could be obtained only by dividing the series into periods of twenty-four years. As he was not fortunate enough to hit upon the plan of a table that would bring this clearly before the eye, I call attention to Table XVII, which meets precisely the requirements of Dr. Valentini. Dividing it into periods of twenty-four years will give this singular enumeration, while dividing it into periods of twenty years will not.

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Third. Additional proof to the same effect I think is also to be derived from a symbolical figure in the Manuscript itself The most notable figure in the upper compartment of Plate XXIII (our Plate IV) is the blue one in the upper left-hand corner on a black background surrounded by a white border, the latter crossed by dotted rays, each ray terminating with a little ring; a dagger is piercing the eye of the blue sitting figure. If we count these clubbed rays we shall find there are twenty-three of them, but exactly where the dagger crosses the border there is room for *one more* According to my interpretation the whole of this figure taken together is a symbol of the Katun or Ahau, the inner blue figure probably denoting the year.[1] If I am correct in this interpretation, then we have here positive evidence that Perez was right in holding that the Ahau consisted of twenty-four years. The whole figure is therefore intended to indicate the close of an Ahau;—when one more year has expired the light of another Ahau will be forever extinguished and the new one will begin its course.

We find, as I think, something similar to this method of marking the missing year on Plates 75 and 76 of the Borgian Codex. These two plates, which are evidently parts of one picture, 76 being the upper and 75 the lower part, are symbolic representations of periods of time. The figures around the central circle of 76 are probably intended to represent the marching years. There are only twelve of them, but in the pathway at the bottom we see the footsteps of one that has passed on. At the four corners outside the circle we see the four "year-bearers."[2]

On Plate 75 the chief figure is that of Kingsborough's supposed crucified Quetzalcoatl; on the body is a large sun or circular disk with seven points, but in the lower margin, where there is the proper space for another, the circle is pierced by the obsidian knife of the priest who holds the withdrawn heart in his hand. Around the figure are similar but smaller disks; counting these we find there are *eight*, the exact number of points required to complete the central disk, and the number of periods (Indications) in an age. Possibly other periods are intended, as I have not studied the Mexican Calendar with sufficient care to express any decided opinion on this point;

[1] Fortunately, the correctness of this supposition, which I mentioned in an article in the American Naturalist for August, 1881, has since been verified by Dr. D. G. Brinton—"The Books of Chilan Balam," p. 15.

[2] Not those usually given, but those evidently used for this purpose in this and other codices.

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my only object in referring to these plates being to illustrate the idea advanced in regard to the meaning of the dagger piercing the eye of the blue figure on Plate XXIII of the Manuscript Troano.

The next point to be determined is the position of the several Ahaues in the grand cycle. This larger group, as admitted by all authorities, consisted of thirteen Ahaues; as $24 \times 13 = 312$, it follows that, assuming the Ahau to be a period of 24 years, this longer period would consist of 312 years. If the first year of the grand cycle coincided with the first year of an Ahau, the position of these latter groups would be determined by simply dividing the former into groups of 24 years, as shown in Table No. XVI, where the dark transverse lines mark the divisions between the Ahaues as thus obtained. This conclusion is so natural that it would seem to follow as a matter of course from the numbers used, and from the fact that the number of years in a grand cycle is an exact multiple of the number of years in an Ahau.

But as Señor Perez, who is our chief authority for what pertains to the Maya calendar, has advanced a different opinion, and as his suggestion affords a means of escape from a very serious difficulty, I will call attention to it before deciding as to which I believe to be the true method of locating these periods. But in order that his theory may be clearly understood it is necessary for us first to determine the dominical day with which the first years of the Ahaues commenced; for it is evident, whether we count twenty or twenty-four years to these periods—as each is a multiple of 4—that if they followed each other in regular order the first year of each would begin with the same dominical day though not the same number. In other words, if one of the series began with a Kan year all the rest would begin with a Kan year. If the first year of a cycle were also the first year of an Ahau, as we would naturally presume, then determining the first year of any one will determine all the others.

In the manuscript discovered by Perez and translated into English by Stephens (from the Spanish translation of the discoverer), we find the following statement: "In the 13th Ahau Chief Ajpula died. *Six years were wanting to complete the 13th Ahau.* This year was counted toward the east of the wheel and began on the 4th Kan. Ajpula died on the 18th day of the month Zip on the 9th Ymix." Taking for granted that the day, the

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number of the day, and the month as given here are correct, it is easy to determine from our condensed calendar that the year must necessarily have been 4 Kan. As there were twenty-four years in an Ahau, and six were yet wanting to complete that referred to in the quotation, it follows of necessity this 4 Kan was the 18th and that this Ahau must have commenced with the year 13 Cauac and ended with 10 Ix. This will be seen by making a list of the years in regular succession, so that 4 Kan shall be the 18th. We give such a list here (Table No. XI), marking in italics the 4 Kan.

TABLE XI.

1—13 Cauac.
2— 1 Kan.
3— 2 Muluc.
4— 3 Ix.
5— 4 Cauac.
6— 5 Kan.
7— 6 Muluc.
8— 7 Ix.
9— 8 Cauac.
10— 9 Kan.
11—10 Muluc.
12—11 Ix.
13—12 Cauac.
14—13 Kan.
15— 1 Muluc.
16— 2 Ix.
17— 3 Cauac.
18— 4 *Kan.*
19— 5 Muluc.
20— 6 Ix.
21— 7 Cauac.
22— 8 Kan.
23— 9 Muluc.
24—10 Ix.

If we place these years in tabular form, as heretofore given, the Ahau will be in the form shown in the annexed table (XII). Here, then, we

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have positive evidence, if to be relied on, that this Ahau at least commenced with a Cauac year (whether the Ahau contained 24 or 20 years), and, if so, all the others of the series.

A somewhat careful examination of Señor Perez's *Cronologia Antigua* satisfies me that his whole scheme was based upon what he believed to be two established facts: *first*, that the Ahaues commenced with a Cauac year; and, *second*, that they were numbered from the second day of these years.

TABLE XII.

Cauac.	Kan.	Muluc.	Ix.
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4*	5	6
7	8	9	10

I am pretty well satisfied from some things observable in the Manuscript Troano that it recognizes Cauac as the dominical day of the first year of the Ahaues. *First.* The order of the four plates XX–XXIII, which refer exclusively to the four dominical days. That Brasseur has paged these plates in exactly the reverse order to what they should be, I think is evident from the following facts: As now paged they bring these days in the following order: Ix, Muluc, Kan, Cauac, exactly the reverse of that in which they come in the calendar. This alone is sufficient to cause us to suspect a reversal. But it is not the only reason for believing this. If we follow the order of the plates in marking the years, we obtain no continuous period, as is evident from the annexed Table XIII.

Second. The numeral (1), over the second Cauac character on Plate XXIII (our Plate IV) and also that over the fifth Muluc character on Plate XXI (our Plate II) is surrounded in each case with a circle of minute dots. Although there are other numeral characters on these four plates denoting *one*, none except these two are thus distinguished. What is this intended to signify? My answer is, it signifies that those two years are the first of important periods that are included in, or at least begin in, the time embraced by these four plates. Now let us test this by giving two tables embracing the period covered by them, marking the Ahaues on one according to the plan I have given, and on the other according to Señor Perez's method.

Table XIV commences with a Cauac year, and is of the usual form, as heretofore given. Table XV begins with a Kan year, and is made in

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accordance with the theory advanced by Perez, who holds that the cycle began with a Kan year, although contending that the Ahaues commenced

TABLE XIII.

Ix.	Muluc.	Kan.	Canac.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

TABLE XIV.

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
—:0:—			
①	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	①	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

TABLE XV.

Kan.	Muluc.	Ix.	Canac.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
—:0:—			
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

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with a Cauac year. On each, the divisions between the Ahaues are marked by solid, heavy, black lines; the usually counted twenty years of each are surrounded by a single dotted line, and the period covered by the four plates by a continuous waved line. The point at which the grand cycle begins is marked thus: ——:o:——. If we examine Table XIV we see that 1 Cauac is the first year of a cycle, and 1 Muluc the first of the usually "counted years" of an Ahau, and that both are within the period covered by the four plates; each is surrounded by a ring in order to designate it. As a matter of course, each is the first year of an "Indication" or week of years; so are 1 Kan and 1 Ix in the same period, yet neither of these is thus distinguished.

If we turn now to Table XV, in which the cycle begins with a Kan year, we can see no reason why either the 1 Cauac or the 1 Muluc in the period embraced by the waved line should have any special mark of distinction.

It is proper to state here that unit numerals surrounded in a similar manner by a circle of dots, are to be found on other plates where it is difficult to apply the theory here advanced.

Another difficulty which arises, if we adopt Perez's theory, is that the last Ahau of a grand cycle does not close with the end of that period, but includes one or more years of the following, according to the place the division begins.

Taking all these facts into consideration, it appears that the calendar system followed by the author of the Troano Manuscript commenced the cycles and the Ahaues with a Cauac year. I think, therefore, the evidence that the Ahaues at least began with a Cauac year is too strong to leave any doubt on this point.

As bearing upon, and, as I believe, tending strongly to confirm this conclusion, I will introduce here some examples from the Manuscript.

In the second division of Plates XXX and XXXI, commencing on the left half of the former and continuing through the latter, we observe a series of figures all similar to each other, except the one to the right on Plate XXX, which is the long-nosed god.

Over each figure, except one, there is a red numeral, but these differ

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from each other in the numbers indicated. In front of each face is the black numeral character for 11. The red numerals are (?), 9, 7, 5, 3. The first is obliterated, but if we judge by the space it would be 1, if by the order, 11; but since the result will be the same, except as to the position of the period obtained by this one in the table of years, it makes no particular difference for the present purpose which we assume is correct. Assuming 11 to be the missing one, the numbers of the days will then be 11, 9, 7, 5, 3.

The days in the column at the left of the compartment on Plate XXXI are Kan, Cib, Lamat, Ahau, and Eb. Hunting out the years in the manner heretofore described, we find them to be as follows:

		11 *Kan.*	11 *Cib.*	11 *Lamat.*	11 *Ahau.*	11 *Eb.*
(11)	Years	1 Cauac.	2 Cauac.	10 Cauac.	5 Cauac.	6 Cauac.
	Years	6 Kan.	7 Kan.	2 Kan.	3 Kan.	11 Kan.
	Years	4 Muluc.	12 Muluc.	13 Muluc.	8 Muluc.	3 Muluc.
	Years	9 Ix.	4 Ix.	5 Ix.	13 Ix.	1 Ix.

		9 *Kan.*	9 *Cib.*	9 *Lamat.*	9 *Ahau.*	9 *Eb.*
(9)	Years	12 Cauac.	13 Cauac.	8 Cauac.	3 Cauac.	4 Cauac.
	Years	4 Kan.	5 Kan.	13 Kan.	1 Kan.	9 Kan.
	Years	2 Muluc.	10 Muluc.	11 Muluc.	6 Muluc.	1 Muluc.
	Years	7 Ix.	2 Ix.	3 Ix.	11 Ix.	12 Ix.

		7 *Kan.*	7 *Cib.*	7 *Lamat.*	7 *Ahau.*	7 *Eb.*
(7)	Years	10 Cauac.	11 Cauac.	6 Cauac.	1 Cauac.	2 Cauac.
	Years	2 Kan.	3 Kan.	11 Kan.	12 Kan.	7 Kan.
	Years	13 Muluc.	8 Muluc.	9 Muluc.	4 Muluc.	12 Muluc.
	Years	5 Ix.	13 Ix.	1 Ix.	9 Ix.	10 Ix.

		5 *Kan.*	5 *Cib.*	5 *Lamat.*	5 *Ahau.*	5 *Eb.*
(5)	Years	8 Cauac.	9 Cauac.	4 Cauac.	12 Cauac.	13 Cauac.
	Years	13 Kan.	1 Kan.	9 Kan.	10 Kan.	5 Kan.
	Years	11 Muluc.	6 Muluc.	7 Muluc.	2 Muluc.	10 Muluc.
	Years	3 Ix.	11 Ix.	12 Ix.	7 Ix.	8 Ix.

		3 *Kan.*	3 *Cib.*	3 *Lamat.*	3 *Ahau.*	3 *Eb.*
(3)	Years	6 Cauac.	7 Cauac.	2 Cauac.	10 Cauac.	11 Cauac.
	Years	11 Kan.	12 Kan.	7 Kan.	8 Kan.	3 Kan.
	Years	9 Muluc.	4 Muluc.	5 Muluc.	13 Muluc.	8 Muluc.
	Years	1 Ix.	9 Ix.	10 Ix.	5 Ix.	6 Ix.

In order to show the position of these groups in the series of years, and how they stand in reference to each other, I give here a table (XVI) covering one entire grand cycle, and including the last cycle of the pre-

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Table XVI.

Canac.	Kan.	Mulnc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

—:o:—

1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

(8) (6) (4) (2)

Canac.	Kan.	Mulnc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

(13) (11) (9) (7)

Canac.	Kan.	Mulnc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

(5) (3)

Canac.	Kan.	Mulnc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

—:o:—

1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

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ceding and the first cycle of the following grand cycles. As I have assumed that the cycle (and hence the great cycle) commenced with the year 1 Cauac, it follows that, in carrying out the above supposition, the first Ahau of the series must also begin with this year. The divisions between the Ahaues are marked on the table by transverse solid black lines. The point at which the first great cycle ends and the next (which is given complete) begins is marked thus: ——:o:——. I next locate the foregoing groups of years so as, if possible, not to clash with each other, and also in such a manner that the period represented by a group shall fall within one of the Ahaues marked off on the table.

Each group is surrounded by a continuous dark line, so as to be easily distinguished from other periods marked on the same table; they are also numbered at the sides thus: (11), (9), (7), (5), (3), these numbers corresponding with the day numbers by which the different groups were obtained.

These groups, each consisting of twenty years, not only fall within the lines marking the Katunes, but come in regular succession, leaving four uncounted years between each two periods—two belonging to one and two to that which follows. In other words, while the Katun or Ahau as a whole, according to the theory upon which I am now proceeding, always commenced with a Cauac year, the twenty "counted years" in the present example begin with a Muluc year. But, as appears from what has already been shown, this is not always true in regard to these periods, yet it is generally the case.

If we observe carefully the five figures in the first or uppermost division of the plates under consideration, we see that they correspond in character to those in the second division to which we have just alluded, and that the black numeral is also the same, (11). The only red numerals recognizable are the 13 over the long-nosed god on Plate XXX, the 8 facing the left-hand figure on Plate XXXI, and the 2 over the left-hand figure on Plate XXX. According to the arrangement of the numbers in the second division, those in this division would be 8, 6, 4, 2, 13, reading from left to right. If we assume these numbers to be correct, and the days to be Eb, Kan,

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Cib, Lamat, and Ahau, as shown by those not obliterated, the years would be as follows:

		13 *Eb.*	13 *Kan.*	13 *Cib.*	13 *Lamat.*	13 *Ahau.*
13	Years....	8 Cauac.	3 Cauac.	4 Cauac.	12 Cauac.	7 Cauac.
	Years....	13 Kan.	8 Kan.	9 Kan.	4 Kan.	5 Kan.
	Years....	5 Muluc.	6 Muluc.	1 Muluc.	2 Muluc.	10 Muluc.
	Years....	3 Ix.	11 Ix.	6 Ix.	7 Ix.	2 Ix.

		8 *Eb.*	8 *Kan.*	8 *Cib.*	8 *Lamat.*	8 *Ahau.*
8	Years....	3 Cauac.	11 Cauac.	12 Cauac.	7 Cauac.	2 Cauac.
	Years....	8 Kan.	3 Kan.	4 Kan.	12 Kan.	13 Kan.
	Years....	13 Muluc.	1 Muluc.	9 Muluc.	10 Muluc.	5 Muluc.
	Years....	11 Ix.	6 Ix.	1 Ix.	2 Ix.	10 Ix.

		6 *Eb.*	6 *Kan.*	6 *Cib.*	6 *Lamat.*	6 *Ahau.*
6	Years....	1 Cauac.	9 Cauac.	10 Cauac.	5 Cauac.	13 Cauac.
	Years....	6 Kan.	1 Kan.	2 Kan.	10 Kan.	11 Kan.
	Years....	11 Muluc.	12 Muluc.	7 Muluc.	8 Muluc.	3 Muluc.
	Years ...	9 Ix.	4 Ix.	12 Ix.	13 Ix.	8 Ix.

		4 *Eb.*	4 *Kan.*	4 *Cib.*	4 *Lamat.*	4 *Ahau.*
4	Years....	12 Cauac.	7 Cauac.	8 Cauac.	3 Cauac.	11 Cauac.
	Years....	4 Kan.	12 Kan.	13 Kan.	8 Kan.	9 Kan.
	Years....	9 Muluc.	10 Muluc.	5 Muluc.	6 Muluc.	1 Muluc.
	Years....	7 Ix.	2 Ix.	10 Ix.	11 Ix.	6 Ix.

		2 *Eb.*	2 *Kan.*	2 *Cib.*	2 *Lamat.*	2 *Ahau.*
2	Years....	10 Cauac.	5 Cauac.	6 Cauac.	1 Cauac.	9 Cauac.
	Years....	2 Kan.	10 Kan.	11 Kan.	6 Kan.	7 Kan.
	Years....	7 Muluc.	8 Muluc.	3 Muluc.	4 Muluc.	12 Muluc.
	Years....	5 Ix.	13 Ix.	8 Ix.	9 Ix.	4 Ix.

Locating these on the same table (XVI) as shown by the groups surrounded by dotted lines, we find that they follow each other in precisely the same order as the other groups. As these groups all fit into the Ahaues as I have divided them off, we have in this fact a strong presumption that our division is correct; still, it is proper to state here, as will be shown hereafter, that all these periods will also fit into the Ahaues if the grand cycle is divided according to the theory advanced by Señor Perez. Yet, even on this plan, these periods begin with Cauac years and have the same numbers; the only difference between the plans, so far as this matter is concerned, is that equivalents do not occupy precisely the same position in the grand cycle, but overlap each other three years.

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Whether the Dresden Codex commences the series with the same year as the Manuscript Troano is a point not yet decided; but from what is shown on Plates 25–28, Kan does not appear to be the first. I think there can be no doubt that these four plates represent the fetes and ceremonies of the supplementary days described by Landa (Relac. de las cosas, §§ XXXV–XXXVIII). The reasons for this opinion will be given hereafter. It is evident from the day-characters in the left-hand column that the plates are numbered in the proper order. These days—of which there are but two on a plate, though each is repeated thirteen times—are probably the last two of the supplementary days of the year. As those on Plate 25 are Eb and Been the year denoted must be Muluc or Ix; that is, the closing Muluc year or commencing Ix year. It is quite plain that the year Kan is not the one denoted. As I will refer more at length to these plates hereafter I will not undertake to determine anything further concerning them here, my only object at present being to show that neither Codex appears to commence the series of years with Kan.

Before closing the discussion in reference to the dominical day of the first year of the Ahau, it is proper to call attention to what Cogulludo says on this point. According to his statement in a quotation from his work, found elsewhere in this paper, the Indians fixed the first year of these periods to the east, to which they gave the name *Cuch-haab;* the second, called *Hiix*, they placed at the west; the third, named *Cauac*, at the south, and the fourth, *Muluc*, at the north. It is evident that Cuch-haab here is the equivalent of Kan, and if we take the numbers as this author gives them, Kan would be the first, but the order in which the other three follow each other would not agree with that found in the calendar. If we commence with Kan and follow the order of these years as given in the calendar, the order of the cardinal points would then be east, north, west, south. It is apparent therefore that this statement throws but little if any light on the subject. It is well known that the south, at which Cauac was placed, was, to some of the Maya nations at least, the point of departure or chief cardinal point. We have therefore as much authority for assuming it as the first of these periods as the simple fact that Cogulludo gives Kan as the first, especially as the number he gives applied to the lusters.

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Our next step is to determine the respective numbers of the Ahaues as located in the grand cycle.

We start as a matter of course with the understanding that the numbers were as heretofore stated—13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2—and that they always followed each other in the order here given; that is to say, 1 always followed 3, 12 always followed 1, and so on.

On folios 71, 72, and 73 of the Dresden Codex we find the following figures placed in one continuous line (Fig. 7); (a sufficient number for illustration only are given):

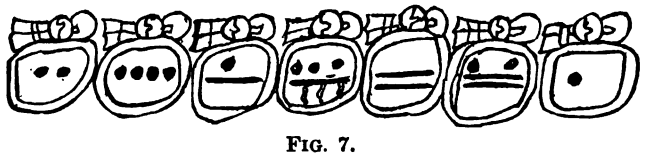

FIG. 7.

Commencing with the left-hand figure and reading to the right, the numbers given in them are 11, 13, 2, 4, 6, 8, 10, 12, 1, 3, 5, 7; in the lower right-hand corner of page 73 we find the missing 9. The fact that the order is here reversed, if read from left to right, is no evidence that this is the order in which the Ahaues (if these figures refer to these periods) followed each other, as it is possible they should be read from right to left. But the fact that we here find thirteen peculiar figures, with the knot denoting the tying of years or period of years, with numbers following each other in the order, whether direct or reversed, of those used in numbering the Ahaues, is sufficient to justify us in believing that they refer to these periods. The only reason I see for any doubt as to the correctness of this conclusion is that on pages 62 and 63 we find similar figures containing numeral characters for 16, 15, 17, and 19, numbers that cannot refer to the Ahaues. Possibly they may be used to designate the years of the Ahaues, but be this as it may, a close inspection of the knots will show that they are different from those on pages 71, 72, and 73.

Knowing the order in which they follow each other, it is evident that if we can determine the number of any one in the series it is a very simple matter to number all the rest.

As the possibility of our being able to compare dates of the Maya system with those of the Christian era depends on the correct determination of this point, I will give not only my own conclusion, illustrating it by means of a table (XVII), but will also show the result of following out

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Señor Perez's theory, the only other possible one, so far as I am able to see, illustrating it also by tables (XVIII and XIX).

According to the statement in the Perez manuscript already quoted, Chief Ajpula died in the 13th Ahau in the year 4 Kan, and there were six years wanting to complete this Ahau. As it appears more than probable, judging by the contents of the manuscript itself, that it was written soon after the Spaniards came into possession of the peninsula, we may, I think, rely upon this date as correctly given, although the manuscript is evidently confused and, in some respects, inaccurate and even contradictory.

If the grand cycle was divided into Ahaues of twenty-four years each, as heretofore suggested, and as shown in the annexed table (XVII), it follows that the one in which this event occurred must necessarily have been that which I have numbered XIII, as there is no other one in the entire grand cycle that has six years remaining after the year 4 Kan.

Each of the tables (XVII, XVIII, XIX) includes one entire grand cycle, also one cycle of the preceding and one of the following grand cycles. The commencement and ending of the grand cycles are marked thus: ——:o:——; the divisions between the Ahaues are marked by solid black transverse lines, each group of the usually counted years is surrounded by a single dotted line; the period embraced by Plates XX–XXIII (our Plates I–IV) is surrounded by a single waved line; the Ahaues are numbered with Roman numerals.

Table XVII begins with a Cauac year, and is made in accordance with the theory I have advanced. Tables XVIII and XIX commence with a Kan year, and are made in accordance with the theory advanced by Perez; XIX, upon the assumption that the first Ahau commenced with the fourth year of the grand cycle; XVIII, upon the theory that it began with the last year of the preceding grand cycle, as one of these two plans must be adopted to carry out his theory.

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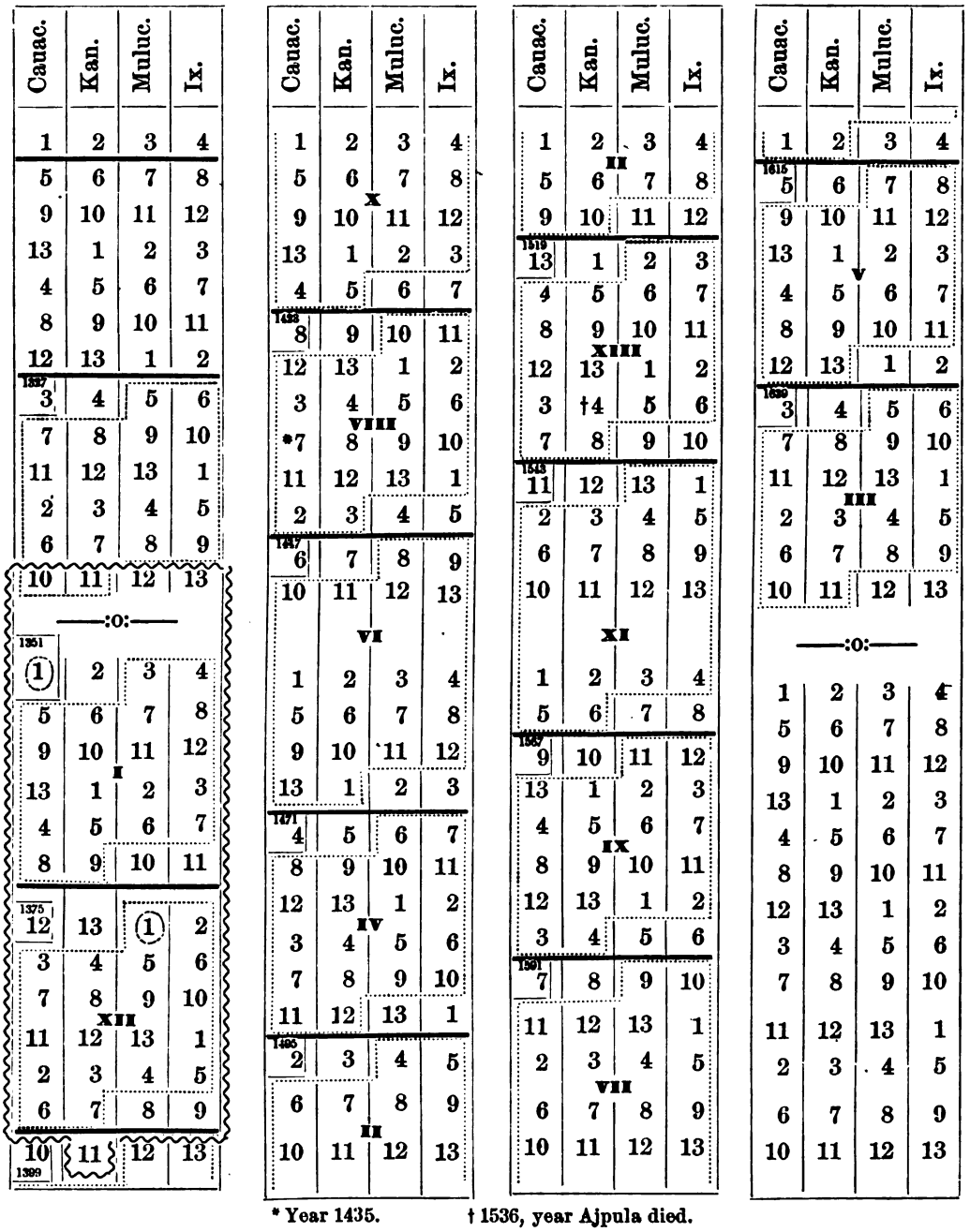
Table XVII.



Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
1337 3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

—:o:—

1351 (1)	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
1375 12	13	(1)	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
1399			

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
		X	
9	10	11	12
13	1	2	3
4	5	6	7
1423 8	9	10	11
12	13	1	2
3	4	5	6
		VIII	
*7	8	9	10
11	12	13	1
2	3	4	5
1447 6	7	8	9
10	11	12	13
		VI	
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
1471 4	5	6	7
8	9	10	11
12	13	1	2
		IV	
3	4	5	6
7	8	9	10
11	12	13	1
1495 2	3	4	5
6	7	8	9
		II	
10	11	12	13

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
		II	
5	6	7	8
9	10	11	12
1519 13	1	2	3
4	5	6	7
8	9	10	11
		XIII	
12	13	1	2
3	†4	5	6
7	8	9	10
1543 11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13
		XI	
1	2	3	4
5	6	7	8
1567 9	10	11	12
13	1	2	3
4	5	6	7
		IX	
8	9	10	11
12	13	1	2
3	4	5	6
1591 7	8	9	10
11	12	13	1
2	3	4	5
		VII	
6	7	8	9
10	11	12	13

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
1615 5	6	7	8
9	10	11	12
13	1	2	3
		V	
4	5	6	7
8	9	10	11
12	13	1	2
1639 3	4	5	6
7	8	9	10
11	12	13	1
		III	
2	3	4	5
6	7	8	9
10	11	12	13

—:o:—

1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

* Year 1435. † 1536, year Ajpula died.

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Table No. XVIII.

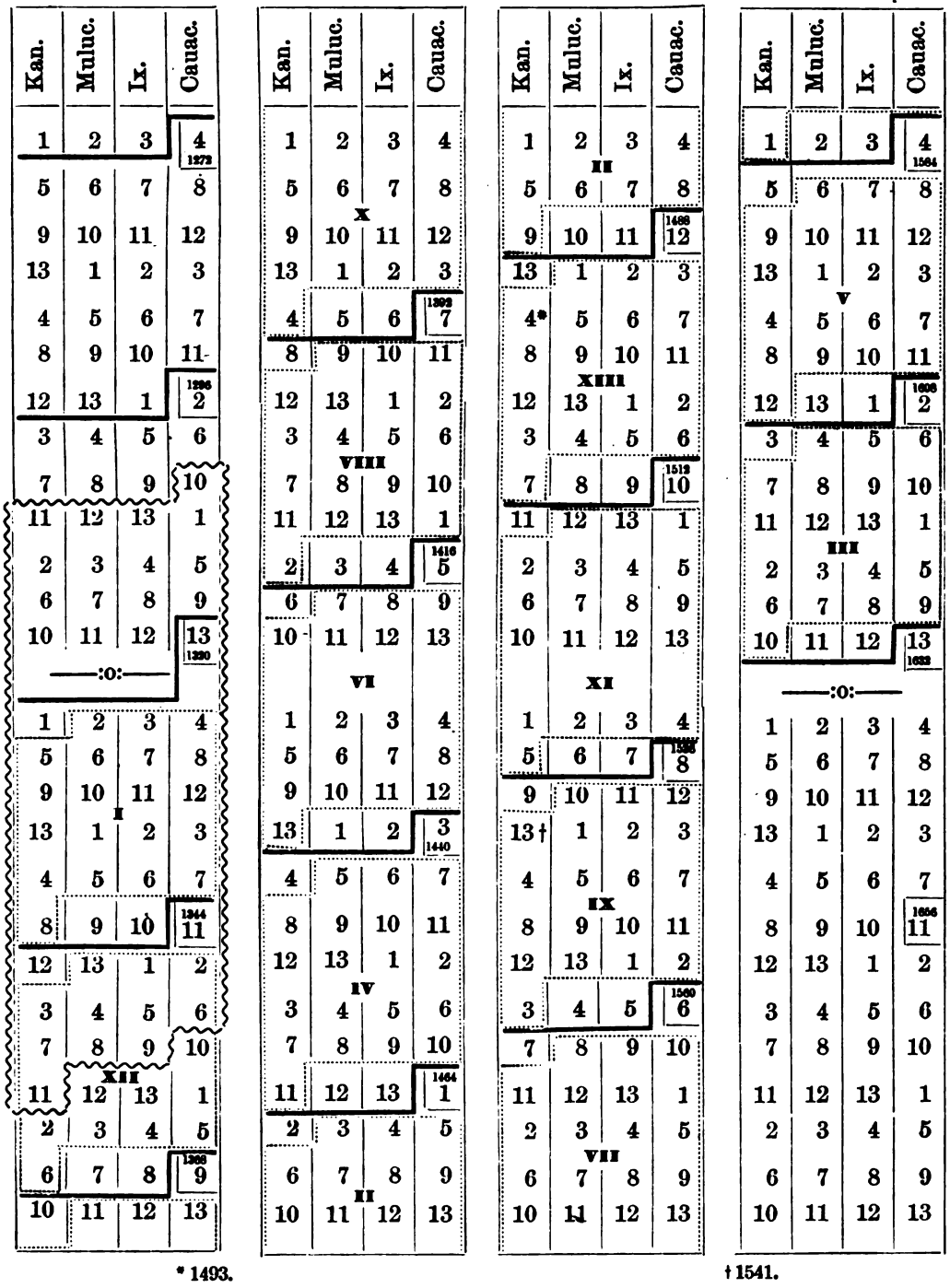

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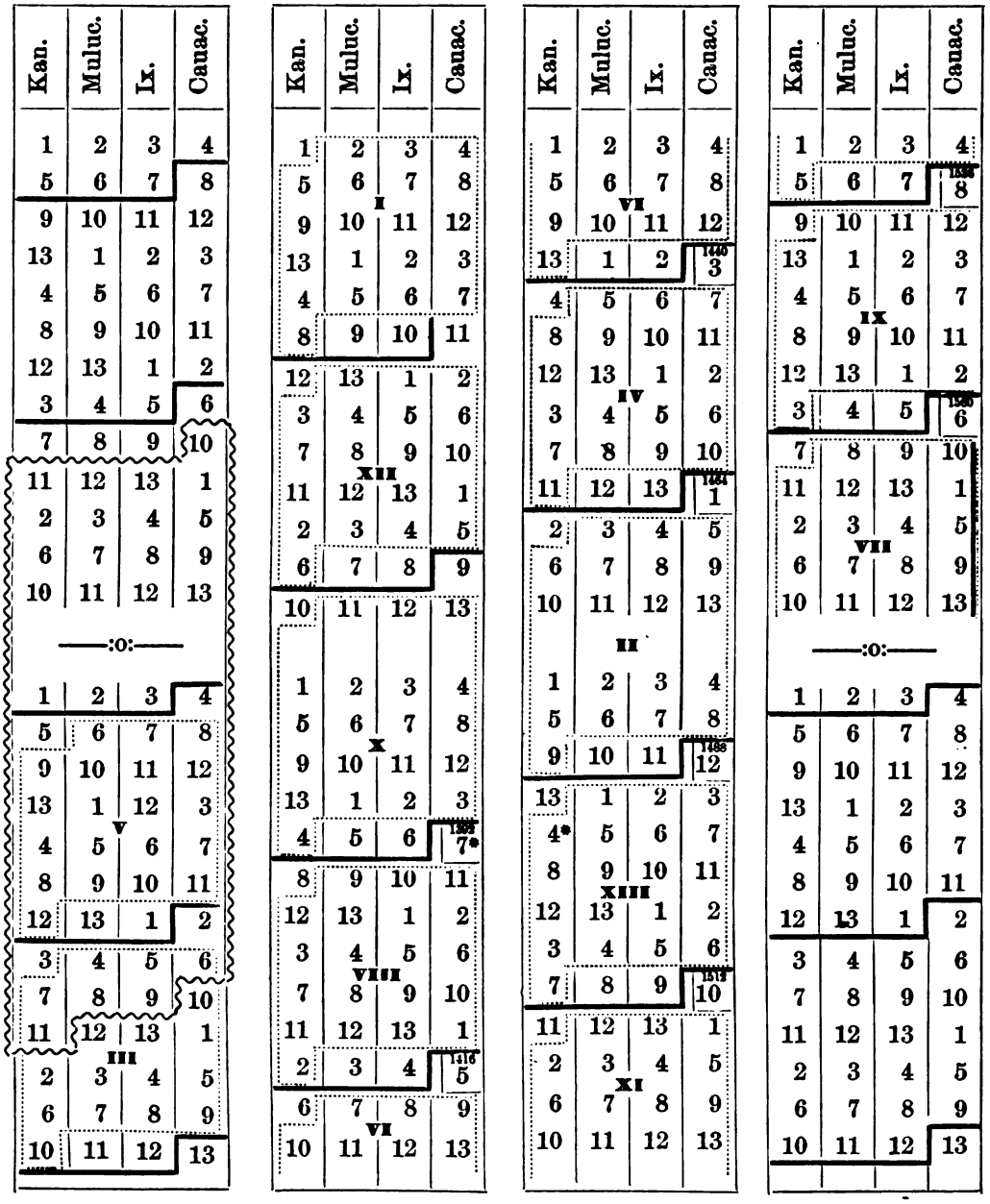
Table XIX.



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If I am correct in the plan of the table given, and the division into Ahaues, it follows that the rest of these periods in the grand cycle would be numbered as shown by the Roman numerals on Table XVII. These numbers agree precisely with the numbers of the first years of the respective Ahaues, and furnish, as heretofore suggested, an explanation of the singular method of enumerating these periods. If we now turn to Table XVI, showing the periods obtained from the dates on Plates XXX and XXXI of the Manuscript, we will see that their position and numbers agree exactly with those given in Table XVII.

As tending to confirm this conclusion, it will be necessary for me to introduce here a comparison of Maya dates with those of the Christian era.

As the designated 4 Kan corresponds, according to the manuscript quoted, with the year 1536, the last year of that Ahau (10 Ix) was 1542. Taking this as a starting point, I have given on the table the year of our era corresponding with the first year of each Ahau. Now let us test this result by the two or three additional dates found on record, and which the authorities have failed to make agree with any explanation of the Maya calendar heretofore given.

Bishop Landa (Relacion de Cosas, § 41) states that "the Indians say, for example, that the Spaniards arrived in the City of Merida in the year of the nativity of our Lord and Master, 1541, which was precisely the *first* year of the 11th Ahau." We may assume as certain that the Indians gave the bishop no such date as 1541, or any other year of the Christian era or Gregorian Calendar, as they were wholly unacquainted with that system; the year given must have been according to their method of designating dates, or by counting back the years.

As he understood the twenty "counted years" to constitute an Ahau, and supposed one of these periods to follow another without any intervening years, he would probably take 9 Muluc of the 13th Ahau as the first of the 11th, which, as will be seen by reference to the table, is 1541, exactly the date required.

It is evident that either he or the author of the Perez manuscript was mistaken, for according to the latter the 13th Ahau ended with the year

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1542 (whether we count 20 or 24 years to the Ahau), while according to Landa it closed with 1540.

He asserts, while writing his work in Spain in 1566, that: "It is now 120 years since Mayapan was destroyed." As this number could have been obtained only by counting Ahaues, it must have been understood by him as covering just six of these periods, and hence the correct number would be 144 years instead of 120. This number carries us back to the year 1422 or 1423, the last of the Xth or first of the VIIIth Ahau. Cogulludo places the destruction of Mayapan about 1420 of the Christian era; the Perez manuscript places it in the 8th Ahau. As the above calculation places it in the last of the tenth or the first of the eighth, the discrepancy is but slight, and the agreement as close as could be expected in an attempt to reconcile such general statements.

Señor Perez seems to have taken as his chief authority, in comparing dates of the two systems, the statements of certain writers to the effect that the year 1392 of our era corresponded with the year 7 Cauac of the 8th Ahau of the Maya system.[1]

Unfortunately he mentions but one of these authorities—Don Cosme de Burgos—whose work he informs us "has been lost."

---

[1] "Serie de los años corridos en dos Ahau Katun, tomando su principio en 1392 en que pasó segun los manuscritos el 8 Ahau en el año 7 Cauac:

8e AHAU KATUN.

1392 ..... 7 Cauac.	1398 .....13 Muluc.	1404 ..... 6 Cauac.	1410 .....12 Muluc.
1393 ..... 8 Kan.	1399 ..... 1 Hix.	1405 ..... 7 Kan.	1411 .....13 Hix.
1394 ..... 9 Muluc.	1400 ..... 2 Cauac.	1406 ..... 8 Muluc.	1412 ..... 1 Cauac.
1395 .....10 Hix.	1401 ..... 3 Kan.	1407 ..... 9 Hix.	1413 ..... 2 Kan.
1396 .....11 Cauac.	1402 ..... 4 Muluc.	1408 .....10 Cauac.	1414 ..... 3 Muluc.
1397 .....12 Kan.	1403 ..... 5 Hix.	1409 .....11 Kan.	1415 ..... 4 Hix.

6e AHAU KATUN.

1416 ..... 5 Cauac.	1422 .....11 Muluc.	1428 ..... 4 Cauac.	1434 .....10 Muluc.
1417 ..... 6 Kan.	1423 .....12 Hix.	1429 ..... 5 Kan.	1435 .....11 Hix.
1418 ..... 7 Muluc.	1424 .....13 Cauac.	1430 ..... 6 Muluc.	1436 .....12 Cauac.
1419 ..... 8 Hix.	1425 ..... 1 Kan.	1431 ..... 7 Hix.	1437 .....13 Kan.
1420 ..... 9 Cauac.	1426 ..... 2 Muluc.	1432 ..... 8 Cauac.	1438 ..... 1 Muluc.
1421 .....10 Kan.	1427 ..... 3 Hix.	1433 ..... 9 Kan.	1439 ..... 2 Hix.

"El punto de apoyo de que se valen para acomodar los *Ahau Katunes* á los años de la era Cristiana y contar los periodos y siglos que en ella han pasade, y entender y saber concordar los años que citan los indios en sus historias con los que corresponden á los de dicha era, es el año de 1392, el cual segun todos los manuscritos, y algunos de ellos ápoyándose en el testimonio de D. Cosme de Burgos escritor y conquistador de esta peninsula cuyos escritos se han perdido, fué el referido año, en el cual cayó 7 Cauac y dió principio en se segundo dia el 8 Ahau; y de este como de un trunco se ordenan todos los que antecedieron y sucedieron segun el orden numerico que guardan y va espuesto: y como con este concuerdan todas las séries que se hallan en los manuscritos, es necesario creerlo como incontrovertible."

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We are therefore left in doubt as to whether the calculation necessary in comparing the date in one system with the same date in the other was made by his authorities or was his own. It is evident that it must have been made by them or by him, as it could not have been given by the Indians. Be this as it may, it is based upon the theory that the 7 Cauac mentioned was the *first year* of the Ahau in which the event noted occurred, a supposition by no means necessary.

Following out this supposition, he is compelled to place the death of Ajpula in the year 1493, thus antedating this event by 43 years. It also leads him into the absurdity of placing the first arrival of the Spaniards on the coast of Yucatan—which occurred in the 2d Ahau—between the years 1464 and 1488.

In order to make this plain, I refer to the Tables XVIII and XIX constructed on his theory, and also to the continuous list of years covering the 8th, 6th, 4th, 2d, and 13th Ahaues (Table XX). The year 1392 and that in which he places the death of Ajpula (1493) are designated on the tables and on the list by a star.

TABLE XX.

VIIIth Ahau.	VIth Ahau.	IVth Ahau.
7 Cauac....1392*	5 Cauac....1416	3 Cauac....1440
8 Kan....1393	6 Kan....1417	4 Kan....1441
9 Muluc....1394	7 Muluc....1418	5 Muluc....1442
10 Ix....1395	8 Ix....1419	6 Ix....1443
11 Cauac....1396	9 Cauac....1420	7 Cauac....1444
12 Kan....1397	10 Kan....1421	8 Kan....1445
13 Muluc....1398	11 Muluc....1422	9 Muluc....1446
1 Ix....1399	12 Ix....1423	10 Ix....1447
2 Cauac....1400	13 Cauac....1424	11 Cauac....1448
3 Kan....1401	1 Kan....1425	12 Kan....1449
4 Muluc....1402	2 Muluc....1426	13 Muluc....1450
5 Ix....1403	3 Ix....1427	1 Ix....1451
6 Cauac....1404	4 Cauac....1428	2 Cauac....1452
7 Kan....1405	5 Kan....1429	3 Kan....1453
8 Muluc....1406	6 Muluc....1430	4 Muluc....1454
9 Ix....1407	7 Ix....1431	5 Ix....1455
10 Cauac....1408	8 Cauac....1432	6 Cauac....1456
11 Kan....1409	9 Kan....1433	7 Kan....1457
12 Muluc....1410	10 Muluc....1434	8 Muluc....1458
13 Ix....1411	11 Ix....1435	9 Ix....1559
1 Cauac....1412	12 Cauac....1436	10 Cauac....1460
2 Kan....1413	13 Kan....1437	11 Kan....1461
3 Muluc....1414	1 Muluc....1438	12 Muluc....1462
4 Ix....1415	2 Ix....1439	13 Ix....1463

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IId Ahau.

1 Cauac	1464
2 Kan	1465
3 Muluc	1466
4 Ix	1467
5 Cauac	1468
6 Kan	1469
7 Muluc	1470
8 Ix	1471
9 Cauac	1472
10 Kan	1473
11 Muluc	1474
12 Ix	1475
13 Cauac	1476
1 Kan	1477
2 Muluc	1478
3 Ix	1479
4 Cauac	1480
5 Kan	1481
6 Muluc	1482
7 Ix	1483
8 Cauac	1484
9 Kan	1485
10 Muluc	1486
11 Ix	1487

XIIIth Ahau.

12 Cauac	1488
13 Kan	1489
1 Muluc	1490
2 Ix	1491
3 Cauac	1492
4 Kan	*1493
5 Muluc	1494
6 Ix	1495
7 Cauac	1496
8 Kan	1497
9 Muluc	1498
10 Ix	1499
11 Cauac	1500
12 Kan	1501
13 Muluc	1502
1 Ix	1503
2 Cauac	1504
3 Kan	1505
4 Muluc	1506
5 Ix	1507
6 Cauac	1508
7 Kan	1509
8 Muluc	1510
9 Ix	1511

IXth Ahau.

8 Cauac	1536
9 Kan	1537
10 Muluc	1538
11 Ix	1539
12 Cauac	1540
13 Kan	1541

XIth Ahau.

10 Cauac	1512
11 Kan	1513
12 Muluc	1514
13 Ix	1515
1 Cauac	1516
2 Kan	1517
3 Muluc	1518
4 Ix	1519
5 Cauac	1520
6 Kan	1521
7 Muluc	1522
8 Ix	1523
9 Cauac	1524
10 Kan	1525
11 Muluc	1526
12 Ix	1527
13 Cauac	1528
1 Kan	1529
2 Muluc	1530
3 Ix	1531
4 Cauac	1532
5 Kan	1533
6 Muluc	1534
7 Ix	1535

Following out this theory we will have to place the taking of Merida by the Spaniards (1541) in the sixth year of the IXth Ahau, instead of the first of the XIth. As Landa went to Yucatan about the year 1549, we are not warranted in supposing that he made an error of thirty years in reference to an event that occurred but a few years before his arrival.

It is apparent from these facts that, assuming, as Perez does, that the year 1392 was the year 7 Cauac, and the first of an Ahau, conflicts with every other date left on record.

I think we may therefore take for granted that there was some error in the calculation by which this author, or those from whom he quotes, obtained this date. As this calculation antedates the death of Ajpula just 43 years, let us add that number to 1392: This gives us 1435. If we turn now to Table XVII, made according to my theory, we find that 7 Cauac

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of the 8th Ahau is the year 1435, and that by adding the 43 years—the number Perez has antedated the death of Ajpula—all the dates agree substantially, and also drop into their proper places in the Maya Calendar.

As the authorities to whom Perez refers obtained their information from the Indians, the date was as a matter of course given according to the Maya method of reckoning time; hence the "year 7 Cauac and 8th Ahau" are most likely to be correct. It is very probable this was the date of some notable event in the history of that people, and as it gives when corrected the year 1435, I am of the opinion it relates to the destruction of Mayapan, which, according to the manuscript translated by Stephens, occurred in the 8th Ahau.

Another error arising from this mistake on the part of Perez was that he was forced to place the death of Ajpula in the 6th year of the 13th Ahau, instead of in the 18th as given by his manuscript, in order to get it in 4 Kan. An examination of Tables No. XVIII and XIX, which are constructed according to his theory, will show that there is no Ahau but number I, in which 4 Kan is the 18th year. This is true no matter where we commence dividing the grand cycle, according to his idea.

As Table XVIII commences the division with the last year of a grand cycle, I have given at the same place another (XIX) on his plan, commencing with the fourth year of this period, in order to illustrate the above statement.

Taking into consideration all the evidence I can obtain bearing upon the points now under consideration I am forced to the following conclusions:

1st. That the series of years began with Cauac.

2d. That the first year of a grand cycle was also the first year of an Ahau.

3d. That the thirteen Ahaues of a grand cycle were numbered as shown in Table XVII.

4th. That they were numbered according to the number of their first years respectively.

But it is best perhaps for me to call attention here to the following facts in reference to the numbering of these periods.

First. That the division of the grand cycle according to the plan I

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have adopted, which is repeated on the annexed Table XXI, does not preclude us from accepting Perez's theory that they were numbered from the second day of the first year, which, as the periods begin with Cauac, would be Ahau. This would change the position of the Ahaues so far as their numbers are concerned, and they would then stand as shown in this table; that is, the first one in the grand cycle would be No. II, the next XIII, and so on in the usual order. But one very serious objection to this plan of numbering is that 4 Kan of the XIIIth Ahau would be the sixth instead of the eighteenth year.

I am of the opinion that the only foundation Perez had for thus numbering these periods is the fact that the name "Ahau" was applied to them. It is probable that it was sometimes so applied on account of their importance, but a careful study of the language of Landa and Cogulludo lead me to believe that *Katun* was the name by which they were usually designated. The latter author gives this term only. Landa simply remarks that "they counted 13 twenties with one of the twenty letters of their month which is called *Ahau*, without order and alternate only as on the border of the wheel above; they called these, in their language, *Katunes*."[1]

The most serious objection which, so far as I see, can be urged against my theory is that the series of Ahaues does not begin with XIII, or, in other words, that the first of the grand cycle is not XIII. But this objection applies with equal force to Perez's scheme. If we adopt the division shown in Table XVIII, and suppose the numbering to correspond with the first year (Cauac) of each period, we would then commence the grand cycle with the XIIIth Ahau. To illustrate this I give a table (XXII) similar to XVIII so far as the division of the grand cycle is concerned, but numbered as above suggested.

[1] "No solo tenian los indios cuenta en el año y meses, como queda dicho, y señálado atras pero tenian cierto modo de contar los tiempos y sus cosas por edades, las quales hazian de veynte en veynte años, contando XIII veyntes con una de las XX letras de los meses que llaman *Ahau*, sin orden sino retruecanados como pareceran en la siguiente raya redonda; llaman les a estos en su lengua *Katunes*, y con ellos tenian a maravilla cuenta con sus edades, y la fue assi facil al viejo de quien en el primero capitulo dixe avia trescientos años accordarse dellos." (Landa, Relacion de las Cosas, § XLI.)

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Table XXI.

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

VI IV

—:o:—

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

II XIII

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

XII IX VII V XIII III

Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

I XII X VIII

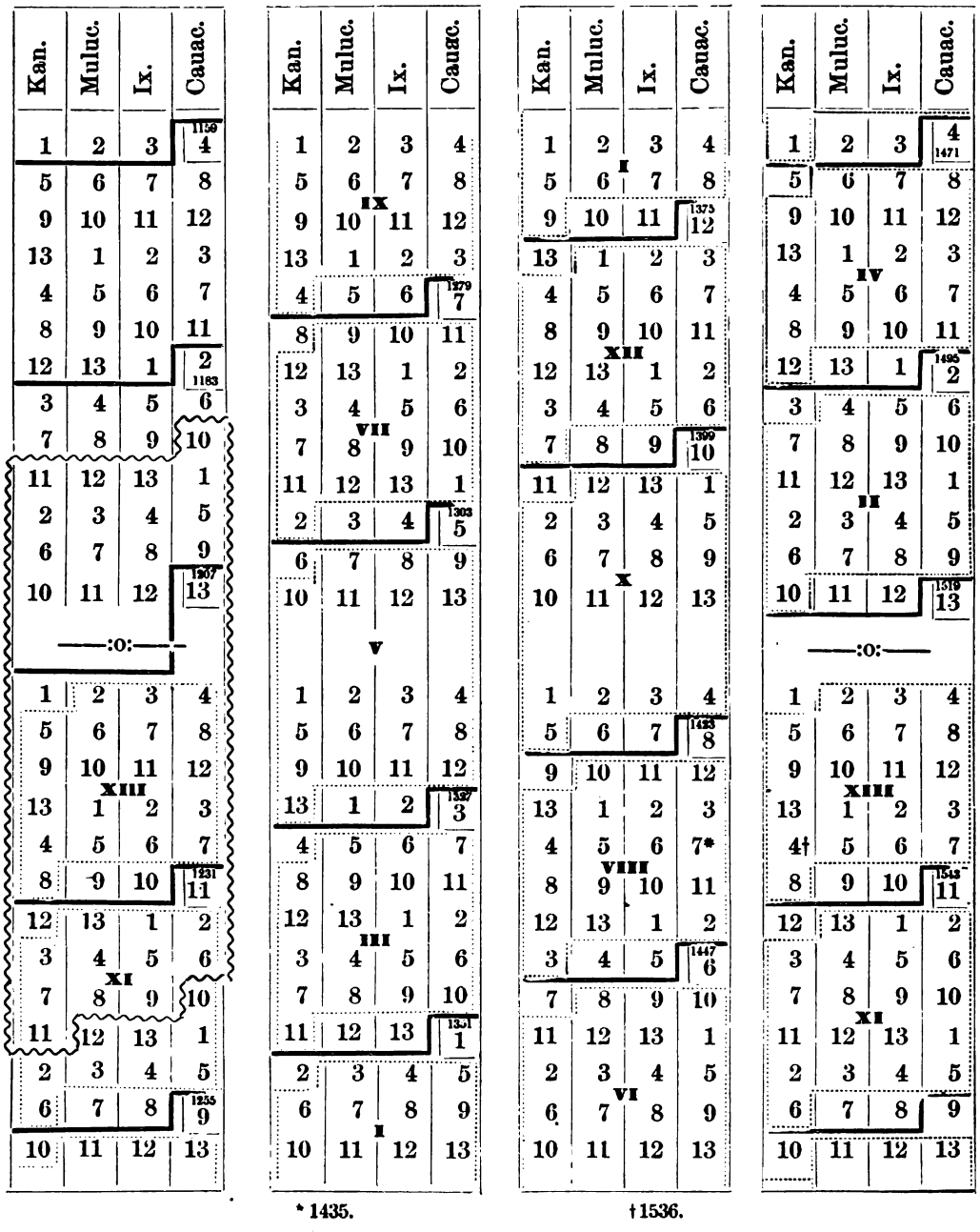
Canac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

VI IV II XIII

—:o:—

This plan has this fact in its favor: it not only throws the XIIIth Ahau at the commencement of the grand cycle, but 4 Kan is also its 18th year.

TABLE XXII.



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Be this as it may, there is nothing in Maya history or the calendar which makes it necessary that the grand cycle should commence with the XIIIth Ahau. As suggested by Perez and Dr. Valentini, this number of the series may have been selected as the one with which to begin their count because of some notable event in their history occurring in it. The serious objection to the plan of Table XXII is that it requires the XIIIth Ahau to begin with the last year of a grand cycle, which, I think, is sufficient to condemn it.

Perez's statement bearing on this subject is as follows:

"As the Indians considered the number 13 as the initial number, it is probable that some remarkable event had happened in that year, because, when the Spaniards arrived in the Peninsula, the Indians then counted the 8th as the 1st, that being the date at which their ancestors came to settle there; and an Indian writer proposed that they should abandon that order also, and begin counting from the 11th, solely because the conquest had happened in that Ahau." (Cron. Antig., § IX, Valentini's Trans.)[1]

I have already quoted from Perez, as pertaining to the calendar, the statement in reference to what he believes to be another kind of cycle or method of computation. I called attention to the fact that the numbers given might be found by running up the columns of our table of years. I will now explain what I believe to have been the object and use of these numbers.

"They had another number which they called *Ua Katun*, which served them as a key by which to adjust and find the Katunes, and following the order of their march, it falls on the two[2] days of *Uayeb haab* and revolves to the end of certain years; Katunes 13, 9, 5, 1, 10, 6, 2, 11, 7, 3, 12, 8, 4."

Perez quotes this, as he states, in the exact words of his authority (unfortunately not given). As Bancroft's translation omits the "two" before "days," I have given here a translation of the original as found in Perez's *Cronologie Antigua*."

[1] As neither Valentini's nor Brasseurs' translation is literal, I will give the original:

"Es probable que principio en el numero 13 por haber acontecido en el algun suceso notable pues despues se contaban por el 8; y acabada la conquista de esta peninsula propúso un escritor indio comenzasen á contar en lo sucesivo estas épocas por el 11 *Ahau* por que en el se verificó aquella."

[2] Not the "*second day of the Uayeb haab*" as Perez seems, as appears from his comment, to have understood the expression. It is strange that he should have so perversely misinterpreted his own manuscripts.

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We see by reference to the annexed table of years (XXIII), which contains exactly one cycle, that by commencing at the bottom of the right-hand or Ix column and running up, we find the numbers given in the quotation and in precisely the same order. As these figures mark the terminal years of the lustres it is evident that the authority quoted applied the name "Katun" to these periods, and that this word is not used here as an equivalent of "Ahau."

TABLE XXIII.

Cauac.	Kan.	Muluc.	Ix.
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	5
6	7	8	9
10	11	12	13

If the series began with Cauac, as shown by this table, these numbers would then denote Ix years; but if it commenced with Kan they would then be Cauac years. In either case it is evident that by remembering these numbers and their order it would be an easy matter to locate or give the number of any year in the cycle, and in the grand cycle also, if they had any method of numbering the cycles. But I am unable to see how this could be of much service in counting the Ahaues, and am therefore inclined to believe that this method of counting back was chiefly in vogue among the common people, they being unable to fully understand and use the complicated calendar of the priests. Although Landa, when speaking of the facility with which they counted back the years, evidently alludes to the Ahaues, yet it is quite probable the old Indian who traced back their history for three hundred years did so by the use of this key, unless he was a priest.

It is difficult to understand what is meant by the expression "they fall on the *two days* of *Uayeb haab*" [intercalated days].

In the four plates of the Dresden Codex heretofore mentioned (25–28), which certainly refer to the feasts of the intercalated days, we notice that the left-hand column of each contains the characters of but two days—the 25th the days Eb and Ben, the last two of the intercalated days of the Muluc years; the 26th, Caban and Ezanab, the last two of the Ix years, and so on.

Although these, as here noted, may not have any reference to this

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method of counting, their use in this manner shows that they were considered important.

If the lustres ended with an Ix year, as I have assumed, Ezanab would be the last of the intercalated days. Now as will be seen by carefully examining the calendar for one year as given in Table II, page 8, the number of the last intercalated day will always be the same as the first day of the year. Having thus determined the name and number of the year, and remembering the series as given in the quotation, it was an easy matter to count back to any desired year. Let me illustrate this: Suppose that at the close of an annual feast of *Uayeb haab* which has ended on Ezanab, an Indian was desirous of determining what year of the cycle had just terminated. Knowing the day to be 1 Ezanab, he knows by this that the year was 1 Ix; remembering the numbers of the key, he commences his count with 1, and running back thus: 1, 10, 6, 2, 11, 7, 3, 12, 8, 4, ascertains that the year is the 40th of the cycle (10×4).

A little careful study of this subject will suffice to convince any one at all acquainted with this calendar that by simply knowing the number and name of the last intercalated day of any year will be sufficient to enable him to determine what year of the cycle it is If he forgets the key he can easily find it by the continued subtraction of 4, commencing with 13, adding 13 when the number to be subtracted from is 4 or less than 4. The only thing necessary to be remembered is that the years Cauac, Kan, Muluc, Ix terminate, respectively, with the days Akbal, Lamat, Ben, and Ezanab.

Suppose the last day of a certain year to be 9 Lamat, this gives 9 Kan as the year; the next year would be 10 Muluc, the next 11 Ix, the last of the lustre. If we remember the key, we count back the following numbers or lustres: 11, 7, 3, 12, 8, 4, showing that 11 Ix would be the 24th year of the cycle and 9 Kan the 22d. These calculations are based upon the supposition that Cauac was the first year of the cycle, but the same rule will apply with Kan or any other as the first of the series.

I think it probable that this will furnish an explanation of the phrase "they fall in the two days of *Uayeb haab* and return to the end of certain years." The manuscript from which this statement was taken by Perez was evidently written by one not thoroughly familiar with the system.

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On the title-page and on Plates XX–XXIII (see Plates I–IV) are certain red semicircular or crescent-shaped figures like this , which we have good reasons for believing served as characters to denote one of the Maya periods, either the Ahau, Cycle, Indication, or part of the grand cycle. This is the proper place to discuss their signification; but as this can be done more satisfactorily after we have learned what we can in reference to the figures given on these plates and the subjects to which they relate, I will now proceed to give such interpretations of the figures and characters on them as I believe are waranted by the discoveries I have made.

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CHAPTER III.

EXPLANATION OF FIGURES AND CHARACTERS ON PLATES XX–XXIII OF THE MANUSCRIPT TROANO AND 25–28 OF THE DRESDEN CODEX.

As heretofore stated, the figures that occupy the spaces on Plates XX–XXIII[1] appear to relate, in part at least, to the close and commencement of the more important periods of time. I have already given my reasons for believing that the blue figure in the upper compartment of Plate XXIII represents an Ahau, and that the piercing of the eye with the dagger signifies that the last year of the period has arrived and is about to close.

Referring to Landa's *Relacion de Cosas* §§ XXXV–XXXVIII, I find the following account of the religious festivals which occurred during the intercalated or closing days of the old and the commencement of the new year, each of the four years, Kan, Muluc, Ix, and Cauac, having its own peculiar ceremonies.

As this is really the key to the explanation of the figures on the four plates mentioned, I quote his statement in full, translated from Brasseur's French, giving the original Spanish in Appendix No. 1.

"XXXV.—*Fetes of supplemental days—Sacrifices of the commencement of the new year of the sign Kan.*

"It was the custom in all the cities of Yucatan that there should be at each of the four entrances of the place—that is to say, the east, west, north, and south—two heaps of stone facing each other, intended for the celebration of two feasts of unlucky days. These feasts took place in the following manner:

[1] The reader is reminded again that Plates XX-XXIII of the Manuscript are the same as our Plates I-IV, a fact which will not be repeated hereafter in the text.

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"The year of which the dominical letter was *Kan* the omen was *Hobnil*, and, according to the belief of the Yucatecs, they both reigned in the region of the south. This year, therefore, they fabricated a hollow image or figure of baked earth, of the idol which they called *Kan-u-Uayeyab*, and carried it to the heap of dry stones which was on the south side. They elected a chief from the citizens, at whose house they celebrated the feasts of these days. At this ceremony they made also the statue of another god, named *Bolon-Zacab*, which they placed in the house of the chief elect, in a spot where every one could approach.

"This done, the nobles, the priest, and the citizens assembled together. They returned, by a road swept and ornamented with arches and foliage, to the two piles of stone, where they found the statue, around which they gathered with much devotion. The priest then perfumed it with forty-nine grains of bruised maize mixed with incense. The nobles placed their incense together in the censer of the idol and perfumed it in their turn. The maize mixed with the priest's incense is called *zacah*, and that which the nobles present is called *chahalte*. Having incensed the image, they cut off the head of a fowl and presented to it.

"When this was finished they placed the statue on a litter called *Kanté*, and on its shoulders an 'angel' as an omen of water and the good year which they should have. As to these 'angels,' they were frightful in appearance.

"Then they carried the statue, dancing with much gaiety, to the house of the chief, where he found the other statue of *Bolon-Zacab*. While they were on the way one of them carried to the nobles and the priest a drink composed of four hundred and twenty-five grains of burnt maize, which they called *Picula-Kakla*, and all partook of it at the same time. Arrived at the chief's house, they placed the image which they carried, face to face with the statue which was already there, and made many offerings of drinks and viands, of meat and fish. These offerings were afterwards divided among the strangers who were present, and they gave the priest only a leg of venison.

"Others drew blood from themselves by scarifying their ears, and anointed with it a stone which they had as an idol, called *Kanal-Acantun*.

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They modeled a heart from the dough of their bread, and in the same way another loaf, of gourd seeds, which they presented to the idol *Kan-u-Uay-eyab*. It was thus that they guarded this statue and the other during the unfavorable days, perfuming them with their incense and with incense mixed with grains of bruised maize. They believed that if they neglected these ceremonies they would be subject to the calamities which were the result of this year. The unlucky days having passed, they carried the statue of the god *Bolon-Zacab* to the temple, and the image of the other to the eastern entrance of the city, in order to have it for the next year. They left it there, and returning home each one occupied himself with preparations for the celebration of the new year.

"As soon as the ceremonies were terminated and the evil spirit dispelled, according to their mistaken idea, they believed this year to be fortunate, because with the sign *Kan* reigns the *Bacab-Hobnil*, who, as they say, has not sinned as his brothers, and for this reason no calamity befell them in that year. But as it frequently happened that this occurred notwithstanding, the demon was conciliated by establishing these ceremonies, so that in case of misfortune they attributed the fault to their ceremonies and to those who served in them, so that they remained always in error and blindness.

"At his instigation, then, they fabricated an idol called *Yzamna-Cauil*, which they placed in his temple, and burnt before it in the court three pellets of milk,[1] or resin, which they called *kik;* they sacrificed to it either a dog or a man, which was done with the ceremony spoken of in chapter one hundred on the subject of victims. There was, however, some difference in the manner of offering this sacrifice; they put in the court of the temple a large heap of stones, and the man or animal who was to be sacrificed was fastened to a sort of elevated scaffold, from whence they hurled him onto the heap of stones; the officers immediately seized him and tore out his heart, which they carried to the new idol, offering it to him between two plates. They made still other offerings of comestibles. At this feast the old women, selected for this occasion, danced, clothed in peculiar garments. They believed that an angel descended then and received the sacrifice.

[1] By the term "milk," as here used, is meant the milky juice of some plant.

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"XXXVI.—*Sacrifices of the new year at the sign of Muluc—Dancing on the stilts—Dance of the old women with the dogs of baked earth.*

"The year of which the dominical letter was *Muluc* had for the omen *Canzienal.* When the time arrived, the nobles and the priest elected the chief who should celebrate the feast. This done, they modeled, as in the preceding year, the image of the idol called *Chac-u-Uayeyab*, and carried it to the heap of stones at the eastern side, where they had left it the year before. They made a statue of the god called *Kinch-Ahau*, which they placed in a suitable spot in the house of the chief; then, from there, setting out by a road neatly swept and ornamented, they returned together with their accustomed devotion to the statue of *Chac-u-Uayeyab.*

"Having arrived here, the priest perfumed it with his incense and forty-three grains of bruised corn, which they called *zacah;* he gave to the nobles the incense called *chahalte* to put in the censer, after which they cut off the head of a fowl, as formerly. They raised up the statue on a litter called *Chacté* and carried it with devotion, while the crowd executed around it certain war dances called *Holcan-Okot, Batel-Okot.* They carried at the same time, to the leaders and the principal citizens, their drink composed of three hundred and twenty-four grains of burnt corn, as before.

"Arrived at the house of the chief they placed the statue facing that of *Kinch-Ahau*, and presented to it the customary offerings, which they divided afterwards as at the last time. They offered to him bread made in the form of the yolk of an egg, and others like the hearts of deer, and another composed with diluted spice. There were, as ordinarily, good men who drew blood from themselves by piercing their ears and anointing with it the stone of the idol named *Chacan-Cantun.*[1]

"Here they took small boys and forcibly pierced their ears, making incisions on them with knives. They guarded this statue until the end of the evil days; meanwhile they burned before it their incense.

"When these days were passed they carried it to the north side, where they were to receive it the next year, and deposited the other in his temple, after which they returned home to prepare for the ceremonies of the new year They believed that if they neglected to celebrate the aforesaid ceremonies they would be exposed to great evils of the eyes.

[1] Doubtless intended for *Chac-Acantun.*

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"This year, of which the dominical letter was Muluc and in which reigned *Bacab-Canzienal*, they regarded as fortunate; for they said that this was the greatest and best of the gods Bacab; also they made him the first in their prayers. With all this, however, the demon inspired them to fabricate an idol named *Yax-Coc-Ahmut*, which they placed in the temple, after having taken away the old statues; they set up in the court which is towards the temple a heap of stones, on which they burnt the incense with a pellet of resin or milk (*kik*), invoking the idol and asking of him deliverance from the misfortunes of the present year. These calamities were the scarcity of water, the abundance of shoots in the maize, and other things of the same kind. As a remedy for these evils the demon commanded them to offer up squirrels and a cover of cloth without embroidery, woven by the old women, whose office it was to dance in the temple in order to praise the god *Yax-Coc-Ahmut.*

"They threatened them still more with a crowd of other misfortunes and evil signs relative to this year, although it was considered fortunate, if they did not accomplish the duties which the demon imposed on them; one among others was a feast with a dance, which they executed mounted on very high stilts, and a sacrifice which they offered of the heads of turkeys, of bread, and of drinks of maize. It was also imposed on them to present images of dogs in baked earth, carrying bread on the back. The old women were obliged to dance with these images in their hands, and to sacrifice to the god a small dog with black spots, and which was still virgin. Those who were the most devoted to this ceremony were to draw blood from the animal and to anoint with it the stone of the god *Chac-Acantum.* These rites and this sacrifice seemed to be very pleasing to the god *Yax-Coc-Ahmut.*"

"XXXVII.—*Sacrifices of the new year at the sign of Yx—Sinister prognostics; how they prevented those results.*

"The year of which the dominical letter was *Yx* and the omen *Zac-Ciui*, the election of the chief who celebrated the feast being finished, they formed the image of the god called *Zac-u-Uayeyab* and carried it to the piles of stone where they had left the other, the year before. They mod-

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eled a statue of the god *Yzamna* and placed it in the house of the chief, after which, by a road ornamented according to the custom, they returned devoutly to the image of *Zac-u-Uayeyab*. On their arrival, they perfumed it with incense as they had done before, and there cut off the head of a fowl. The image having been afterwards placed on a litter called *Zachia*, they carried it devoutly, accompanying it with dances called *Alcabtan-Kam-Ahau*. They carried their usual drink on the way, and arriving at the house the image was placed in order before that of *Yzamna* and they made their offerings, to divide them afterwards; before the statue of *Zac-u-Uayeyab* they presented the head of a turkey, patties of quails, different drinks, etc.

"As formerly, there were among the spectators some who drew blood from themselves, with which they rubbed the stone of the god *Zac-Acantun*. In this manner they guarded the idols during the days preceding the new year, and incensed them according to their custom until the last day; then they carried *Yzamna* to the temple and *Zac-u-Uayeyab* to the west of the city, leaving it there until the following year.

"The misfortunes to which they were exposed this year, if they happened to neglect these different ceremonies, were fainting fits, swoons, and diseases of the eye. They considered it as a year unfortunate as to bread, but abundant in cotton. It was this which they signalized with the character *Yx*, and in which the *Bacab Zac-Ciui* reigned, who foretold nothing very good; according to their belief, the year must bring calamities of all sorts, a great want of water, days when the sun would shine with excessive heat which would dry up the fields of maize; the consequence would be famine; from famine arose robberies and from robberies slavery for those who rendered themselves guilty. All this would naturally be the source of discord and internal wars among the citizens and among the towns. They believed that in the year marked by this sign there also generally happened changes among the princes or the priests, in consequence of the wars and dissensions.

"Another omen which they also held, was that some of those who sought to gain authority would not arrive at their end. This year was also sometimes signalized by an irruption of locusts, the consequence of which would be famine and the depopulation of a large number of locali-

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ties. In order to remedy these calamities, which they feared entirely or in part, they made, at the instigation of the demon, the statue of an idol named *Kinch-Ahau-Yzamna;* they placed it in the temple, where they offered to it all kinds of incense and oblations, drawing their blood and sprinkling with it the stone of the god *Zac-Acantun.* They executed different dances, the old women dancing as usual; at this feast they formed anew a small oratory to the demon; they assembled there to offer sacrifice to him and to give him presents, and finished with a solemn orgie, where every one became intoxicated, for this feast was general and obligatory. There were also some fanatics who, of their own accord, and through devotion, made another idol, like that which is mentioned above, which they carried into other temples, making it offerings and intoxicating themselves in its honor. They regarded these orgies and sacrifices as very agreeable to their idols and as preservatives capable of preventing the misfortunes with which they believed themselves threatened."

"XXXVIII.—*Sacrifices of the new year at the sign of Cauac—Evil prognostics prevented by the fire dance.*

"This year, of which the dominical letter was *Cauac* and the omen *Hozanek*, after they had elected a chief of the ceremonies, they formed, in order to celebrate it, the image of the god *Ek-u-Uayeyab;* they carried it to the piles of stone at the west entrance, where they had left the image of the year before. They made at the same time the statue of the god called *Uac-Mitun-Ahau*, which they placed, as usual, in the most convenient spot in the chief's house. From there they went together to the place where they found the image of *Ek-u-Uayeyab*, having taken care previously to ornament the road; arriving there, the nobles and priests incensed this image, after their custom, and cut off the head of a fowl. When this was finished, they took the statue on a litter called *Yaxek* and placed on its shoulders a gourd with a dead man and, besides, the ashes of a bird which they called *Kuch*, as a sign of great mortality; for this year was considered very unfortunate.

"They afterwards carried it about in this manner, with devotion mingled with sadness, executing several dances, among which there was one

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like the *crottees*, which they called *Xibalba-Okot*, which signified dance of the demons. In this interval the cup-bearer arrived with the drink for the nobles, which they drank in the place where the statue of *Uac-Mitun-Ahau* stood *vis-à-vis* with the image of which they had the care. Immediately they commenced the oblations, the perfuming, and their prayers; a great number drew blood from different parts of their bodies and anointed with it the stone idol called *Ekel-Acantun*. Thus passed the unfortunate days, after which they carried *Uac-Mitun-Ahau* to the temple and *Ek-u-Uayeyab* to the south entrance, where they left it until the following year.

"This year, signalized by the character Cauac, and in which the *Bacab-Hozanek* rules, besides the plague with which it was threatened, was particularly regarded as fatal; they said that the extreme heat of the sun destroyed the fields of maize, without considering the multiplication of ants and birds that devoured the remainder of the seed; however, they added, these calamities need not be entirely general, there were some places where subsistence could be obtained, although with great difficulty. To prevent these calamities they made, at the instigation of the demon, four idols, named *Chichac-Chob*, *Ekbalam-Chac*, *Ahcan-Uolcab*, and *Ahbuluc-Balam;* after having placed these together in the temple, where they perfumed them as usual, they presented to them two pellets of resin named *kik*, to be burned, also iguanas, bread, and a miter, with a bouquet of flowers and a stone which they considered of great value. Besides, they raised, for the celebration of this feast, a large arch of wood in the court, filling it with wood above and on the sides in order to burn, leaving in it, however, gateways for entering in and going out. Then, the greater part of the men took each one a bundle of long dry sticks and, while a musician mounted on the top of the funeral pile sang and beat the tambour, all danced with much order and devotion, entering in and going out, one after the other, under the arch. They continued to dance in this manner until evening, when, leaving their bundles of sticks, they went home to rest and refresh themselves.

"When night fell they returned, accompanied by a great crowd; for this ceremony was regarded with great respect among them. Each one taking then his bundle, lighted it and put the fire on the funeral pile, which

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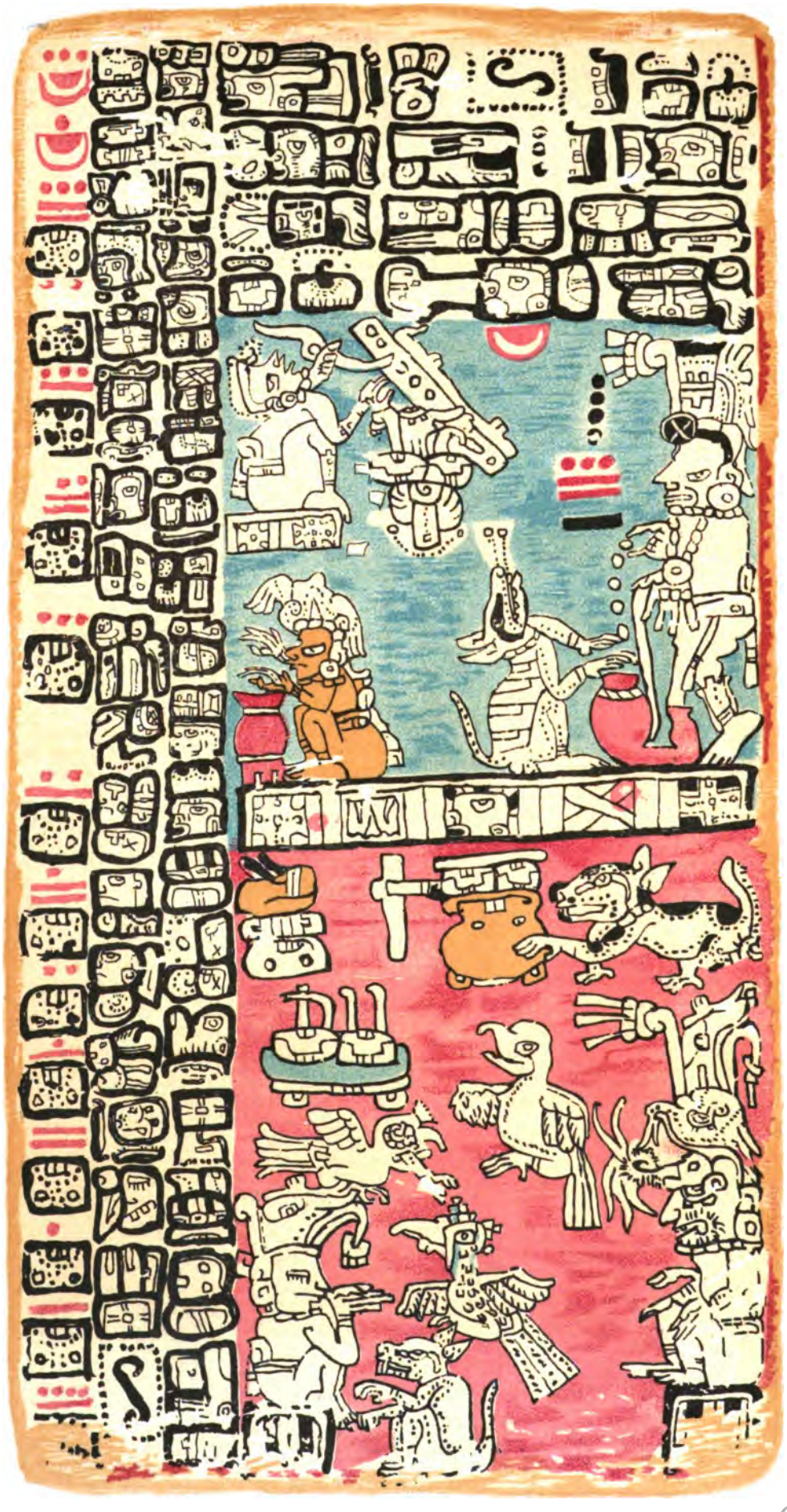

T. Sinclair & Son Lith.

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FAC-SIMILE OF PLATE XX OF THE CODEX TROANO.

[illegible] caught [illegible] only one [illegible] and left [illegible] had [illegible] before [illegible] and attempt [illegible] over without injury [illegible] slightly [illegible] that thus they [illegible] and [illegible] to avert the [illegible] the belief [illegible] be more conciliating to the [illegible] kind of sacrifice.

"This finished [illegible] to drink and [illegible] themselves; for this was required [illegible] the feast and the heat of the fire."

If we turn now to [illegible] 27, and [illegible] of the Dresden Codex and study them carefully, I [illegible] will find enough there to warrant us in deciding that they are [illegible] these [illegible]

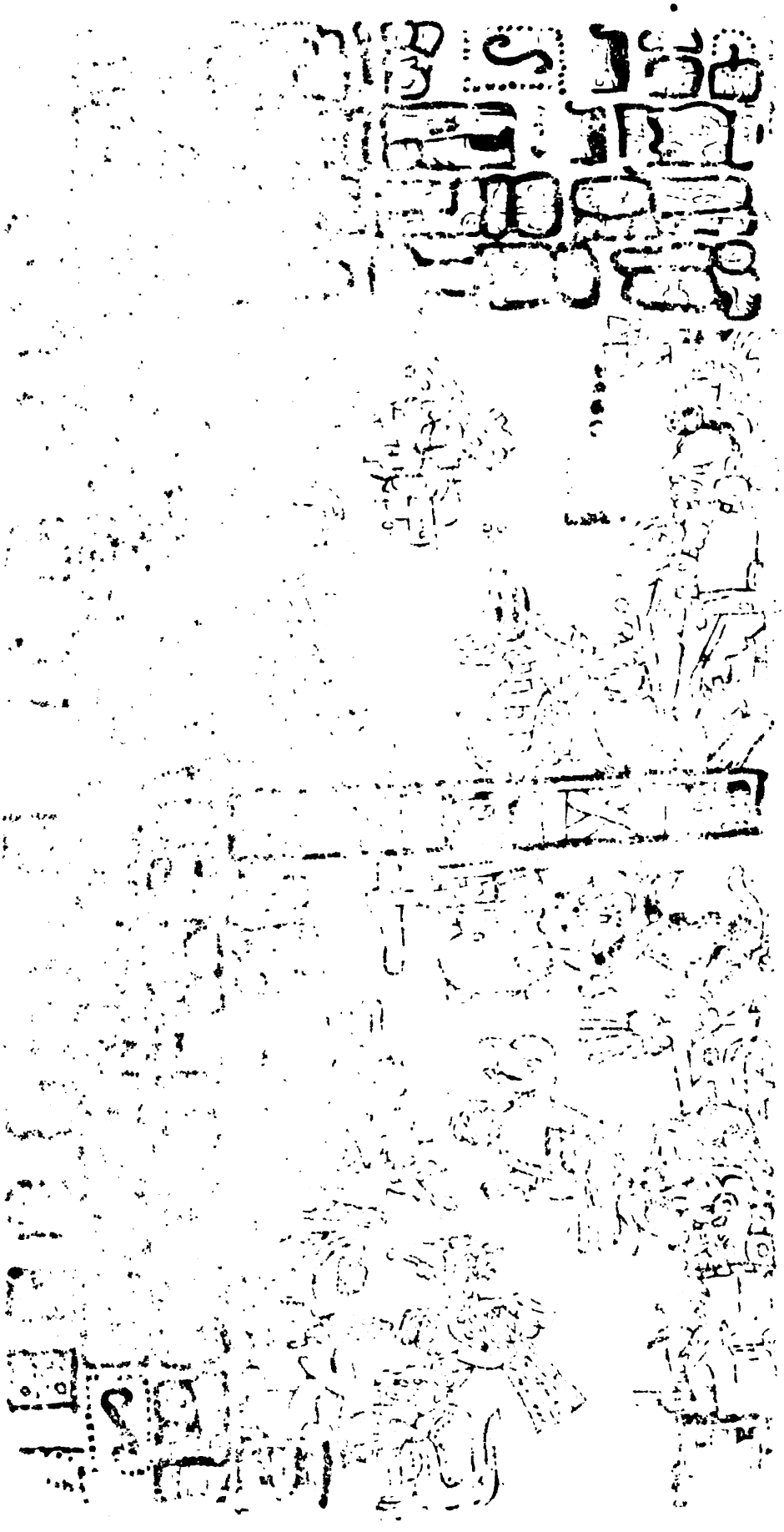
In the first place, [illegible] these [illegible] which are coined on our Plates V, VI, VII [illegible] that they are quite different from [illegible]

In the second place, [illegible] each plate contains but two days, and in each case [illegible] two of the intercalated days; those on Plate 25 (Pl. V) [illegible] and B [illegible] last two days of the Muluc years, on Plate 26 (Pl. [illegible] the last two of the Ix years; on Plate 27 (Pl. VII) [illegible] and Akbal, the last two of the [illegible] years; and those on Plate 28 (Pl. VIII), Manik and [illegible] the Kan years. A fact worthy of note in this connection is [illegible] these days is repeated fourteen times, the exact [illegible] years in a cycle.

In the third place, we see in the lowest compartment of [illegible] the priest holding in his hand a headless fowl; [illegible] Landa's words, "*[illegible]*"; "[illegible] beheaded a fowl and presented it as an offering."

In the upper division of each we see the chosen assistant with head and tail of the Chac, bearing on his back the newly-formed [illegible] his march to the heap of stones at the border of the village, or [illegible] of the selected chief.

In the middle division we see the priest burning [illegible] was their custom, to drive away the evil spirit; [illegible]



FAC-SIMILE OF PLATE XX OF THE [illegible] CODEX [illegible]

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immediately caught fire and burned rapidly. As soon as there was only one brand left burning they announced it to the throng, and those who had danced before assembled together and attempted to cross it, some passing over without injury and some being slightly or seriously burned, imagining that thus they prevented the plague and the anger of the gods, and to avert the evil omens of the year, in the belief that nothing could be more conciliating to their gods than this kind of sacrifice.

"This finished, they returned home to drink and intoxicate themselves; for this was required by the custom of the feast and the heat of the fire."

If we turn now to Plates 25, 26, 27, and 28 of the Dresden Codex and study them carefully, I think we shall find enough there to warrant us in deciding that they are intended to represent these four festivals.

In the first place, it is apparent that these four plates, which are copied on our Plates V, VI, VII, VIII, all relate to the same subject, and that they are quite different from those which precede or follow them.

In the second place, the left-hand day-column of each plate contains but two days, and in each case these are the last two of the intercalated days; those on Plate 25 (Pl. V) being Eb and Ben, the last two days of the Muluc years; on Plate 26 (Pl. VI), Caban and Ezanab, the last two of the Ix years; on Plate 27 (Pl. VII), Ik and Akbal, the last two of the Cauac years; and those on Plate 28 (Pl. VIII), Manik and Lamat, the last two of the Kan years. A fact worthy of note in this connection is that each of these days is repeated thirteen times, the exact number of each of these years in a cycle.

In the third place, we see in the lowest compartment of each plate the priest holding in his hand a headless fowl; agreeing exactly with Landa's words, "*degollavan una gallina y se la presentavan o offrecian*"; "they beheaded a fowl and presented it as an offering."

In the upper division of each we see the chosen assistant with the head and tail of the Chac, bearing on his back the newly-formed image on his march to the heap of stones at the border of the village, or to the house of the selected chief.

In the middle division we see the priest burning incense, in order, as was their custom, to drive away the evil spirit; the sign or glyph "Ik" in

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the midst of the flame renders almost certain the correctness of this interpretation.

This agreement in so many particulars between these plates and Landa's statements is certainly sufficient to warrant us in assuming that the two refer to the same things; that is, to the festivals held during the *Uayeyab haab* or closing days of the different years.

Before attempting to show the relation these plates of the Dresden Codex bear to those of the Manuscript Troano, it will be necessary for me to ask the reader to examine them carefully as I enter into more particular details.

It is apparent from Landa's language that the festival of the last days of one year was intended as a celebration of the new or incoming year; that is to say, the festival of the last days of the Kan year was intended as a celebration of the incoming Muluc year, and, in fact, did not close until the first or second day of the latter. This being the case, we presume that the plate containing the last two days of the Kan year, for example, represents the commencement of the Muluc year, and that some, at least, of the figures and characters shown on it refer to that year. Following up this idea, I conclude that Plate 25, on which the days are Eb and Ben, the last days of the Muluc year, refers to the commencement of, and may properly be called the plate of the Ix years; that Plate 26 refers to the beginning of the Cauac years, Plate 27 to the Kan years, and Plate 28 to the Muluc years.

Taking for granted that this conclusion is correct—which I think few if any will doubt—let us see what further can be deduced from it.

Landa, Cogulludo, and Perez tell us that each of the four dominical days was referred by the Indians to one of the four cardinal points. As the statements of these three authorities appear at first sight to conflict with each other, let us see if we can bring them into harmony without resorting to a violent construction of the language used. Perez's statement is clear and distinct, and as it was made by one thoroughly conversant with the manners and customs of the natives, and also with all the older authorities, it is doubtless correct.

He says, "the Indians made a little wheel in which they placed the initial

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days of the year. *Kan* at the *east*, *Muluc* at the *north*, *Gix* or *Hix* at the *west*, and *Cauac* at the *south*, to be counted in the same order."[1]

The statement of Cogulludo, which agrees substantially with this, is as follows: "They fixed the first year at the *east*, to which they gave the name *Cuch-haab;* the second at the *west*, and called it *Hiix;* the third at the *south*, named *Cauac*, and the fourth, *Muluc*, at the *north*."

Turning now to Landa's work (Relac. des Cosas, §§ XXXIV), we are somewhat surprised to find the following language: "The first of these dominical letters is *Kan*. The year having this character was the first, and had for its sign the *Bacab*, the other names of which were *Hobnil*, *Kanal-Bacab*, *Kan-pauah-tun*, *Kan-xib-chac*. They placed this on the south side. The second letter is *Muluc*, which is placed on the eastern side, and this year has for its sign the *Bacab*, which is called *Canzienal*, *Chacal-Bacab*, *Chac-pauah-tun*, *Chac-xib-chac*. The third of these letters is *Yx*. The sign during this year was the *Bacab* named *Zac-zini*, *Zacal-Bacab*, *Zac-pauah-tun*, *Zac-xib-chac*, and it signified the northern side. The fourth letter is *Cauac;* the sign of this year is the *Bacab* called *Hozan-ek*, *Ekel-Bacab*, *Ek-pauah-tun*, *Ek-xib-chac*, which is assigned to the western side."[2]

This, as we see, places Kan at the south, Muluc at the east, Ix at the north, and Cauac at the west, conflicting directly with the statements made by Cogulludo and Perez. If we turn now to the descriptions of the four feasts as given by Landa, and heretofore quoted, I think we shall find an explanation of this difference. From his account of the feast at the commencement of the Kan year (the intercalated days of the Cauac year), we learn that first they made an idol called *Kan-u-uayeyab*, which they bore to the heap of stones on the south side of the village; next they made a statue of the god *Bolon-Zacab*, which they placed in the house of the elected chief,

[1] "Estos indios pintavan una rueda pequeña, en la cual ponian los cuatro geroglificos de los dias con que principiava el año, *Kan* al oriente, *Muluc* al norte, *Hix* al poniente, y *Cauac* al sur, para que se contasen en el mismo orden." (Cronologia Antigua, § VII.)

[2] "La primera pues de las letras dominicales es *Kan*. El año que esta letra servia era el aguero del *Bacab* que por otros nombres llaman *Hobnil*, *Kanal Bacab*, *Kan-pauah-tun*, *Kan-xib-chac*. A este señalavan a la parte de medio dia. La segunda letra es *Muluc* señalavanle al oriente, su año era aguero el *Bacab* que llaman *Canzienal*, *Chacal Bacab*, *Chac-pauah-tun*, *Chac-xib-chac*. La tercera letra es *Yx*. Su año era aguero el *Bacab* que llaman *Zaczini-zacal-Bacab*, *Zac-pauahtun*, *Zac-xibchac*, señalavanle a la parte del norte. La quatra letra es *Cauac;* su año era aguero el *Bacab* que llaman *Hozanek*, *Ekel-Bacab*, *Ek-pauah-tun*, *Ek-xib-chac;* a este señalavan a la parte del poniente."

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or chief chosen for the occasion. This done, they returned to the idol on the southern stone heap, where certain religious ceremonies were performed, after which they returned with the idol to the house, where they placed it *vis-à-vis* with the other—just as we see in the lower division of Plates XX–XXIII of the Manuscript Troano. Here they kept constant vigil until the unlucky days (*Uayeb-haab*) had expired and the new Kan year appeared; then they took the statue of *Bolon-Zacab* to the temple and the other idol to the heap of stones at the *east* side of the village, where it was to remain during the year, doubtless intended as a constant reminder to the common people of what year was passing.

Similar transfers were made at the commencement of the other years; at that of Muluc, first to the east, then to the house, and then to its final resting place on the north side; of Ix, first to the north, then to the west;[1] of Cauac, first to the west, then to the south.

This movement agrees precisely with the order given by Perez; and the final resting places of the idols for the year being the cardinal points of the dominical days where he fixes them; that is, Kan at the east; Muluc at the north; Ix at the west, and Cauac at the south.

There is therefore no real disagreement between the authorities on this point.

If we turn now to Plate VI of the Manuscript Troano we find these four characters in the spaces of the upper and middle divisions. No. 3

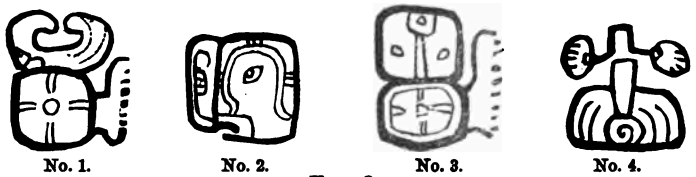

FIG. 8.

is in the upper left-hand corner; No. 2 in the lower left-hand corner; No. 1 in the lower right-hand corner, and No. 4 in the upper right-hand corner. We find the same characters placed in the same order in the upper and middle divisions of Plate VII and the upper division of Plate VII*. They are also found in the corners of the spaces of Plates XVIII*, XXVI, XXIX*, XXX*, XXXI*, and XXXII*, but not always in the same order.

[1] Brasseur makes a mistake in his translation, giving east instead of west.

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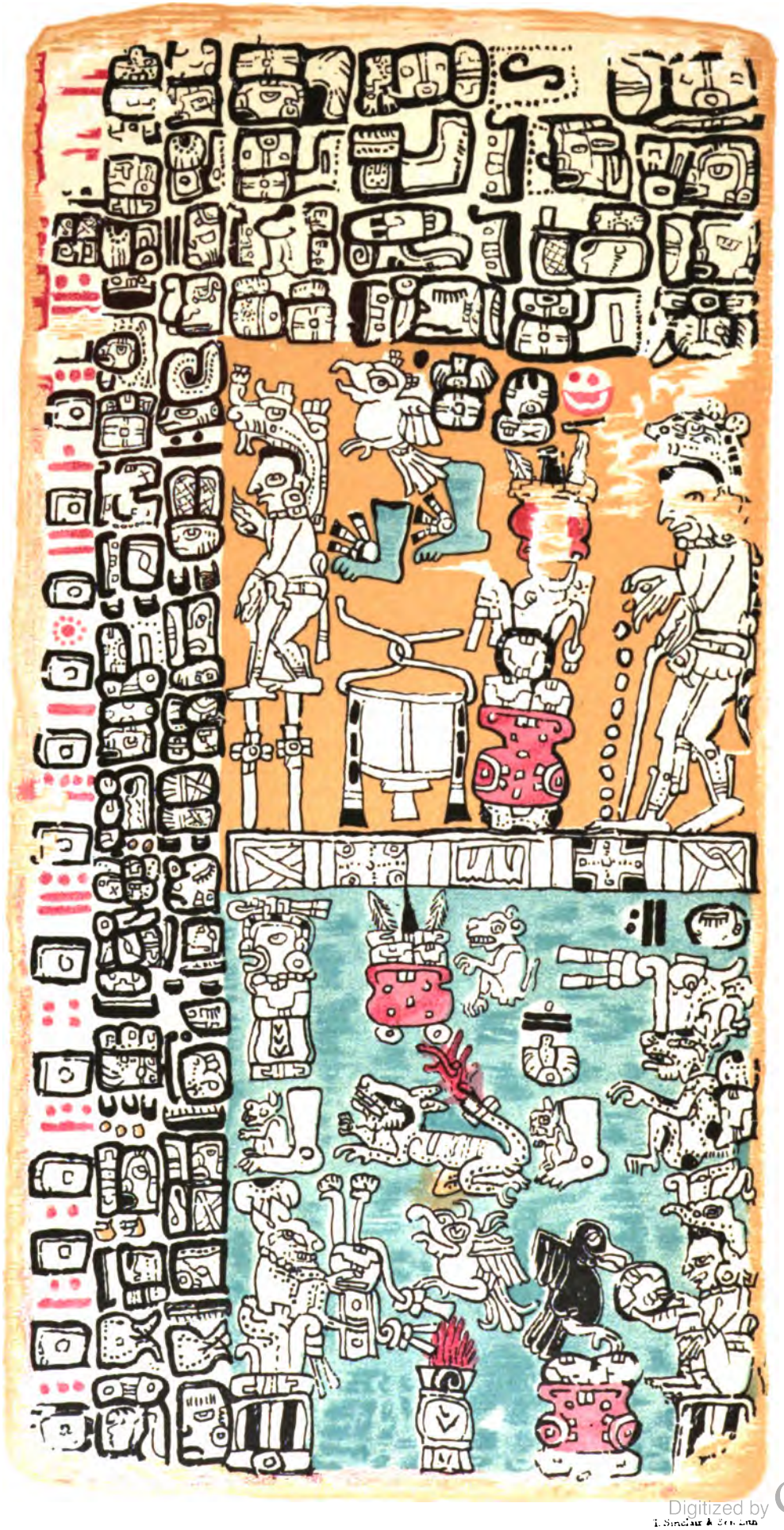

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FAC-SIMILE OF PLATE XXI OF THE CODEX TROANO.

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Turning to the "title page" of the same manuscript, we find that these are the first four characters in the second transverse line.

The position of the characters on the plates mentioned led me, at an early stage of my investigations, to believe they were intended to denote the four cardinal points; but the fact that the order was not always the same, and the apparent impossibility of finding words in the Maya lexicon agreeing with Landa's letter characters and at the same time denoting the cardinal points, induced me for a time to doubt the correctness of this theory; but the discovery of the signification of these four plates of the Dresden Codex induces me now to believe that this first impression was correct. It is possible these characters have also some other signification, but that they are intended to designate the cardinal points I can no longer doubt.

In the last or lowest transverse line of characters on Plate 27 of the Dresden Codex (our Plate VII)—the one relating to the close of the Cauac and commencement of the Kan years—we find the character No. 1 (Fig. 8) in close proximity with another character, which I will presently show signifies "stone" or a "heap of stones." If this indicates a cardinal point it must be south or east; if it refers to the place to which the idol was first taken it would then signify south, if to its last resting place it would then signify east. In the corresponding line of Plate 28 (our Plate VIII) we find character No. 2; in that of 25 (our Plate V), character No. 3; in that of 26 (our Plate VI), character No. 4. If we suppose these characters to indicate the final resting places of the idols then character No. 1 would signify east, 2 north, 3 west, and 4 south; but if the first resting place, then character No. 1 would signify south, No. 2 east, No. 3 north, and No. 4 west. That Nos. 1 and 3 relate to the places of the rising and setting of the sun, I think is evident from the following facts:

First. That these are the only two out of the four characters which have anything similar in them.

Second. The lower half of each is precisely like the lower half of Landa's symbol for the month Yaxkin, from which we may infer that it signifies *kin*, "sun." This also agrees with the fact that the Maya words for east and west (*likin, chikin*) both end with "kin," which signifies sun or day. Although Landa gives this figure without the wing as the character

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for the letter "T," I think there can be no doubt that when combined with the side wing it signifies "sun" or "day," both words being the same in the Maya language. I find that Brasseur and Dr. Valentini[1] reached the same conclusion respecting this character, which bears some resemblance to the Mexican symbol for day , and a still closer resemblance to that for year. I am satisfied, therefore, that these two characters refer to the east and the west, and hence that the only point left for us to decide is, which appertains to the east and which to the west. This I think may be determined from the plates of the Dresden Codex. If No. 1 on Plate 27 must there be either south or east, and our reasoning showing that it could not be either south or north be correct, it follows that it must signify east, the direction assigned to the Kan year, and that here it refers to the final resting place of the idol *Kan-u-Uayeyab.*

If I am so far correct then character No. 1 (Fig. 8) signifies east, No. 2 north, No. 3 west, and No. 4 south.

If we turn now to Plates 46, 47, 48, 49, and 50 of this Codex we find on each, two square groups or masses of characters consisting of either five or six transverse lines and four columns. One transverse line of each group is composed of these four characters, which, as I believe, are here used to indicate the cardinal points. Assuming my interpretation of them to be correct, it will be necessary to read these lines from right to left to obtain the order given by Perez; for example the lines on these plates read, as the characters stand, thus:

First group, Plate 46.—North, east, south, west.
Second group, Plate 46.—West, north, east, south.
First group, Plate 47.—North, east, south, west.
Second group, Plate 47.—West, north, east, south.
First group, Plate 48.—North, east, south, west.
Second group, Plate 48.—West, north, east, south.

And the same on Plates 49 and 50. Reading these from the right to the left we have the order given by Perez, but the initial days will be as

[1] Also Rosny.

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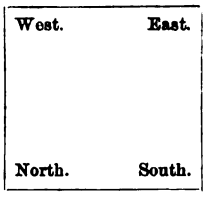
follows: for the groups marked "first," Ix, and for those marked "second," Cauac, and the order in which they succeed each other, as follows:

1st. Ix, Cauac, Kan, Muluc.

2d. Cauac, Kan, Muluc, Ix.

The first agrees exactly with the order of the days referred to by Plates 25–28 of this Codex, and the second precisely with Plates XX–XXIII of the Manuscript taken in reverse order to the paging. The first also agrees exactly with the order in which the first four characters in the second line of the title page of the Manuscript come, if read from left to right as the numbers above them indicate. If we turn to Plate XXXII* of the last-mentioned Manuscript[1] we will see that the left-hand column of the upper division consists of the four dominical days placed in the following order, reading from the top downward: Ix, Cauac, Kan, Muluc, precisely in the order of the four plates of the Dresden Codex; we also find in the space of this division the characters which I have supposed mark the cardinal points, but placed as shown here.



Landa, speaking of the ceremonies connected with the making of idols of wood, remarks (p. 308) that "they offered incense to the four gods called *Acantunes*, which they had placed at the four parts of the world" (the four cardinal points). But these were of stone, as we have already learned from the extracts referring to the festivals of the supplemental days.

In the lowest division of Plate XXV* there are four idols over which are these four characters; the first, or left-hand one, is the headless figure seen on Plate XXIII, the character over it that which denotes the west; the second the spotted dog seen on Plates XX and XXI, the character over it signifies the north; the third a monkey, possibly the same as seen in the lower division of Plate XXI, the character over it the east; the fourth a bird, the character over it the south.

[1] Roman numerals refer to the plates of the Manuscript; Arabics to those of the Codex.

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There are other plates on which these characters appear to indicate the cardinal points, but what has been given is sufficient to show the evidence upon which I base my opinion as to the meaning of the characters. The presence of these on Plates 25–28 of the Codex, in the manner there given, is perhaps the surest guide as to the quarters to which they respectively belong; the fact they are so often found occupying the four corners of the spaces of the plates of the Manuscript is what leads us to suspect that they indicate the cardinal points. The chief, and, so far as I can see, the only objection to this interpretation is the occasional change of order in the spaces; but, as we have seen, this seldom, if ever, occurs where they are in a line. The chief doubt is as to the points assigned them.

If my explanation is correct, then it is possible that the Maya words which they represent are as follows:

No. 1 (Fig. 8), *Likin*, "east." No. 2, *Xaman*, "north."

No. 3, *Chikin*, "west." No. 4, *Ma-yam*, "the middle of the earth" (south), or *Nohol*, "south."

The inverted character for Ahau in No. 3, and that for Manik in No. 1, may raise an objection in the minds of some to this interpretation, but the reader must bear in mind that I do not yet insist that these characters are the symbols for the words above given. They may refer to priests, utensils, or other things connected with or used during religious ceremonies; for example, No. 3 may be the symbol for *Ahkin*, "priest," No. 4, for *Mayac*, "table"; No. 2 for *Am*, the sacred stone used in casting the horoscope, &c., but at the same time these, by the relative positions they occupy during ceremonies, may serve to indicate the cardinal points, and hence the days. This being the case, the characters, by long usage for this purpose, would ultimately become the symbols of this secondary signification.

Fig. 9.

Referring again to Landa's account of the festivals, heretofore quoted, we observe that one of the idols was finally placed on the heap of stones at the margin of the village In the lowest division of each of the plates—25–28 of the Codex—we see an idol resting on a character like this (Fig. 9); the idol on Plate 25, with a head somewhat similar to that of the Tlaloc

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FAC-SIMILE OF PLATE XXII OF THE CODEX TROANO.

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figures in the Manuscript; those on Plates 26, 27, and 28 apparently part of the trunk of a tree clothed, and around which a serpent is coiled. From this fact I infer that the character signifies a "stone" or "stone-heap." The same character is also found under the figures placed opposite each other in the lower divisions of Plates XX–XXIII of the Manuscript, the only exception being that under the left figure in the lower division of Plate XXII. I had, from a study of the character itself, come to the conclusion, previous to the discovery of the signification of the four plates of the Codex, that it was the symbol for stone, especially for the stone used in marking the divisions between periods of time. I was led to this conclusion by a careful comparison of Landa's symbol for the month Pax with other similar characters in the Manuscript. If I am correct in this opinion, then the character probably represents one of the two Maya words *Piz*, signifying "a stone serving to form the divisions in a Katun or cycle," or *Ppic*, "stones placed one upon another, serving to count the intervals in the cycles." We find this character, as before remarked, in the lower transverse lines of the plates of the Codex, in close proximity to the symbols of the cardinal points, which agrees very well with Landa's statement.

In the third or lowest division of Plate 27 we see the figure of a *fish* on two Kans, which are in a vessel. This probably represents the "angel" placed on the "palo" or litter "as a sign of water;" though it is possible it simply denotes one of the offerings made to the idol before which it is placed. It is worthy of note that a similar figure is found in the second character of the fifth line of the title-page of the Manuscript; but, in this case, it is in the column which has the symbol for "south" as its second character. As Plate 27 of the Codex relates to the close of a Cauac year, as well as to the commencement of a Kan year, the presence of this figure in these places agrees very well with the interpretation above given.

Although we have by no means exhausted our explanation of the four plates of the Codex, we are now prepared to compare them with the four of the Manuscript, and will proceed to make the comparison, reserving what further interpretations we have to give of them to a subsequent part of our paper.

There are four plates in each, relating to the four dominical days or

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year bearers, and the days used to designate the years are repeated thirteen times on each plate; in the Codex, the last two days of the year are selected for this purpose; in the Manuscript the first only, but even here we see the symbols of the terminal days in the transverse line between the two spaces.

The idols in each are placed on the same character—that which I have interpreted as signifying the "stone" or "stone heap" used to mark the divisions of time. The serpent appears in three plates of each work, and is wanting in the fourth, the latter in both cases being that which relates chiefly to the Ix years. At the bottom of the lower division of Plate 28 (Codex) we see a figure resembling the leg of a deer bound by a double cord; a similar figure appears at the upper left-hand corner of the lower division of Plate XX (Manuscript), our Plate I. I think it is evident that Brasseur was right in interpreting this as the symbol of the Maya word *hau*, "the quarter of a deer or other animal," from Landa's statement in his account of the festival of the Kan year—"*davan al sacerdote una pierna de venado*," "they gave the priest a leg of venison."

It is true that this figure is found, in the Codex, in the plate supposed to relate to the Muluc year, while in the Manuscript it is in that which applies to the Ix year, and that in Landa it is mentioned in connection with the ceremonies of the Kan year; but this is not sufficient to destroy the value of these coincidences in our effort to interpret these plates. For, in the first place, there is no reason for supposing the Codex relates to the same time and place as the Manuscript; in the second place, each of the plates in both works appears to refer, in part, to two years; in the third place, Landa's description is not sufficiently exact and minute to make the comparison full and complete. I may also add that, while the plates of the Codex appear to relate only to the ceremonies of the supplemental days, those of the Manuscript apparently refer to other festivals, especially those held at the close and commencement of long periods of time. For example, what is symbolized by the two left-hand figures of the upper division of Plate XXII of the Manuscript appears to be represented in Plate 30 of the Codex.

The Uayeyab idols of the two works are certainly different from each other, though I think it very doubtful whether the figures in either are true representatives of the images; possibly those on the Codex plates are.

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A careful comparison of the chief figure in the lowest division of Plate 27 of the Codex with the left-hand figure in the lower division of Plate XXIII of the Manuscript convinces me that the two are intended as symbols of the same idea or as representatives of the same person. That the former is essentially different from the corresponding figures on Plates 25, 26, and 28 is apparent to any one who will take the trouble to compare them. The cape is here in front instead of on the back. The anklets and bracelets—which appear to be used as tokens of caste—are different from the others. There is also a wide variation in the head-dress, which, together with the exposed bone of the lower jaw, the docked nose, and lines of dots on the limbs, indicate that this priest is here representing Death or the god of Death. A cursory examination of other plates of both works where the same figures will be found is sufficient to satisfy any one of the correctness of this opinion. I refer the reader who may have the works at hand to Plates XXX, XXXIV, III*, XXII*, XXX*, XXXII* of the Manuscript, and also Plates 6, 11, 12, 18, 45, and 53 of the Codex.

A somewhat similar figure is borne on the back of the Chac in the upper division of Plate 28 of the Codex, on which we see the same bracelets, head-dress, exposed jaw-bone, and lines of dots. Landa states, as will be seen by reference to his account of the festivals of the intercalated days heretofore given, that at the commencement of the Cauac year they carried, among other things, a "dead man." According to the interpretation given, Plate 27 refers to the close of the Cauac and commencement of the Kan year, and 28 to the close of the Kan and commencement of the Muluc year, which would place this ceremony in the year following that given by Landa.

Referring now to Plate XXIII of the Manuscript, which relates in part at least to the Cauac years, we see in the lower left-hand corner of the lower division a white figure with the same anklets and bracelets; and, although portly and apparently clothed with flesh, the ribs denoting death are plainly marked. A hand is stretched out as if to catch the skull, which is dropping from the head-dress that arises out of the earthen vessel.

I note the following additional items in which they correspond; in the

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canopies, or whatsoever they may be, behind the sitting priests in the middle divisions of the four plates of the Codex we observe this figure , a St. Andrew's cross, surrounded by the usual circle—those on Plates 26 and 28 with the cross white on a black ground. Precisely the same figures are found on three of the plates of the Manuscript, those on XX and XXIII with black ground and white cross.

In the lowest transverse line of characters of each of the four plates of the Codex, we find, as heretofore remarked, a symbol of one of the cardinal points. The same thing is true of the plates of the Manuscript, as will be seen by examining the lowest transverse line above the upper space.

The head of the Ara is seen on Plate 28 of the Codex in the same space (lowest division) as the bound "leg of venison." The two are in the Manuscript (Plate XX, lower division), but here the whole bird is figured.

In the upper division of Plate XX we notice issuing from the mouth of the dog two lines of dots each terminating in a little circle or circular dot. In the lower division of Plate 25 of the Codex we see two similar dotted lines arising from the severed neck of the bird. In both works these peculiar lines are on the Ix plates only.

Such are the chief resemblances between the plates of the two works. Some, it is true, are those of common occurrence, and taken alone would not be sufficient evidence to indicate that the plates relate to the same subject: but when we take all the resemblances into consideration, especially the more important ones mentioned, I think there can be but little doubt left upon the mind of any one that these four plates of the two works, in great part, at least, relate to the same subject—the festivals described by Landa as occurring at the close of the years. To which year or years a given plate refers I admit is a point in regard to which there is yet some uncertainty. This necessarily leaves us in some doubt respecting the proper assignment of the cardinal or direction symbols; but this fact does not affect the general correctness of my conclusions as to the subject-matter of these plates and the meaning of the figures and characters.

Leaving the further consideration of the plates of the Codex to a future page, I will now call attention to other figures and characters on the four

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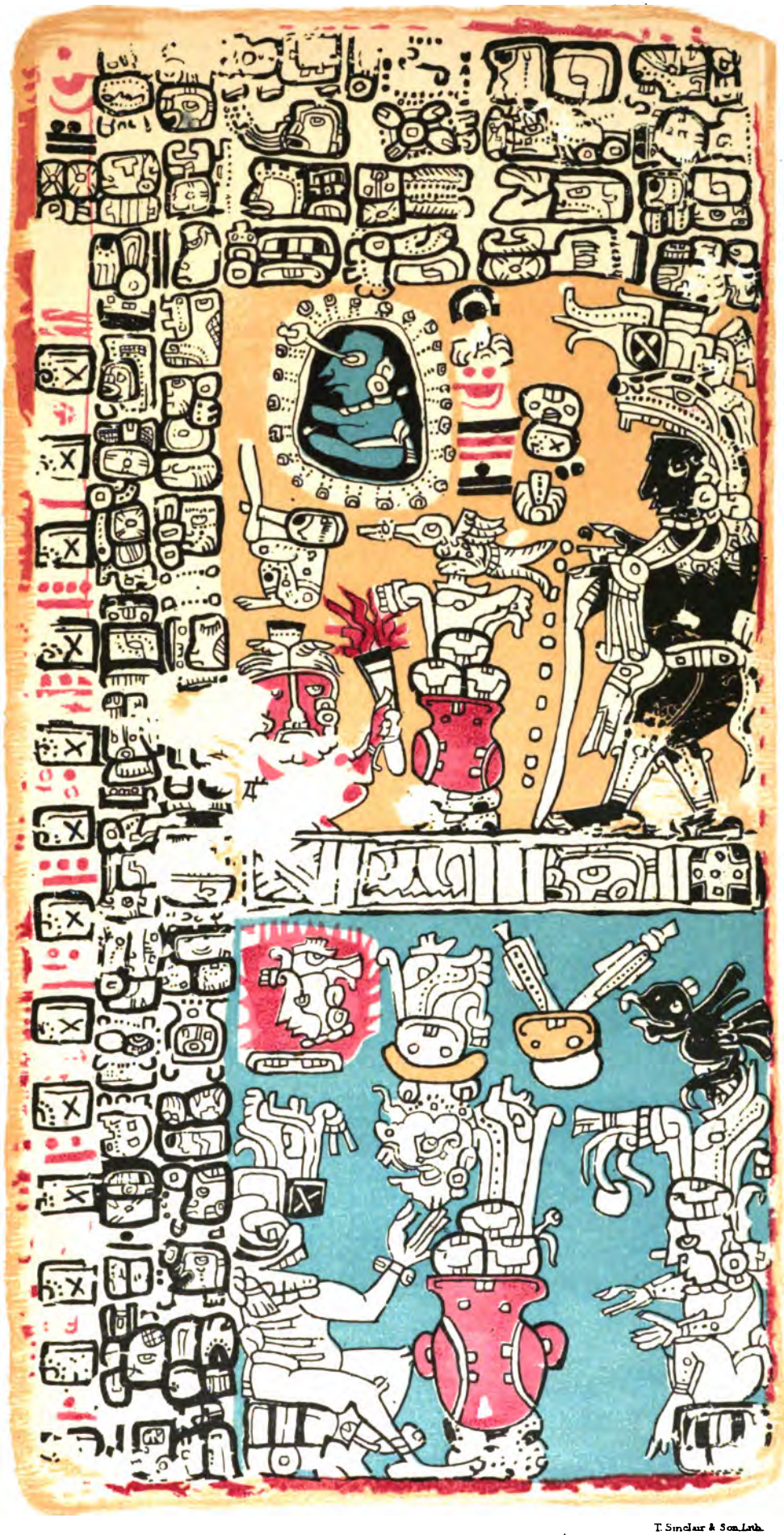

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FAC-SIMILE OF PLATE XXIII OF THE CODEX TROANO.

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plates of the Manuscript and give the signification of them so far as I have been able to make this out. I will start with the assumption that the conclusion drawn from the comparison just made—that they relate in part at least to the festivals of the supplemental days—is correct; and as affording additional evidence, I first call attention to the following facts: Landa, in his account of the ceremonies relating to the Muluc year, remarks that "the devil commanded them to offer squirrels and a cloth cover (or cloth ornament), without embroidery, woven by the old women whose office it was to dance in the temple for the purpose of appeasing the god *Yax-coc-Ahmut*."

In the upper division of Plate XXI (that relating to the Muluc year) we see this cloth, which we judge from the figure was to be worn by the priests. It is plain and without ornamentation, save what is on the strips at the side.

The same account, as will be seen by reference to the quotation in full heretofore made, mentions that "among other things performed at this festival was a ballet or dance executed on very high stilts" (*en muy altos zancos*). In the upper division of the same plate (XXI) we see one of the dancers on stilts.

It also states that "they were required to present dogs of burnt clay bearing bread on the back"; that "the old women were obliged to dance with these dogs in their hands, and to sacrifice to the god a little dog with black shoulders." In the lower division of the same plate we observe three figures of small unspotted dogs, two of which are seated on human feet, which is doubtless intended to denote that they are carried during the dance. To the right is another figure of a dog marked with large black spots, and bearing on its back the symbol of Ymix or Imix mounted on that of Kan.

It is true these figures do not agree exactly with Landa's description, as he does not appear to refer to the two classes of dog images—the plain and the spotted—but to the latter only. But we may expect this writer, who mentions these things more incidentally than otherwise, to be more or less confused where so many particulars are to be remembered, especially if his work was written in Spain, where he had necessarily to rely to a great extent upon his memory. But the fact that these figures are found on

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the plate that relates to the Muluc years; the peculiarly marked dog, bearing these symbols on its back; the little dog images on the feet, together with the agreement in other particulars, are sufficient to warrant us in concluding that these figures relate to the ceremonies he describes. Taking the figures and statement together I conclude that the little plain dog-images, three of which are represented, were those carried during the dance, while the spotted one bearing the characters on its back—of which there is but a single figure—represents that which was to be sacrificed. In the collection of pottery made by Colonel Stevenson in 1880 among the Pueblos of New Mexico, are quite a number of plain little animal images, chiefly those of birds, which he informs me were used in like manner by the Indians of these pueblos.

If I am correct in this interpretation, we will then be warranted in concluding that the double character (Fig. 10) signifies "bread," doubtless "bread of maize." Taken separately we know that the upper is used as the symbol of the day Ymix or Imix, and the lower of Kan; but the primary significations of these words, or rather the words that these symbols stand for, is somewhat doubtful. Perez gives no definition of the former, neither in his lexicon nor Cronologia. Brasseur gives the following signification in his Vocabulary—"Deep pit; issue from a focus or of the breast"; but in a note to the Cronologia (§ II) he makes this remark: "*Ymix*, written *Imox* in the Quiche Calendar, in that of Chiapas is represented under the image of a marine monster of a peculiar form; it is the *Cipactli* of the Mexican Calendar, given by Nuñez de la Vega, as the first father of the race of these countries." The latter (*Kan*) has several significations, such as "a cord or string of henequin," "yellow," "a certain measure," "red earth," "clay," &c. He also gives as other meanings, "increased," "elevated," "manifest," "consolidated," &c. But I judge from Perez's language that the ancient signification was somewhat uncertain.

FIG. 10.

The Maya word for "maize" is *Ixim*, and I am strongly inclined to believe that Imix is but a synonym, also that the symbol was originally used to signify this great food plant. I think it also probable that the symbol for Kan was used originally to represent the "grain" of corn, hence the gathered and stored corn or ears, and that the name was derived from the

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yellow or golden color. On Plates XIX* and XX* of the second part of the Manuscript—lowest division—we observe women bearing burdens on their backs in baskets; the substance carried by three out of six is represented by Kan symbols, and is probably gathered maize.

It is worthy of notice that one of the names of their chief deity Zamna or Itzamna, is *Itzen-caan*, signifying the "dew of heaven," or "substance from heaven." *Itzen* and *Itzam* are given by the lexicons as equivalents, and *tzen*, and its derivatives, contains throughout the idea of food or that which sustains life. *Ixkan-Leox* was the name of a female divinity supposed to be the spouse of Zamna; the signification of the name, according to Brasseur, is "*Celle de la fronde jaune aux grains de mais*"; in other words, the "silk." In the upper division of Plate 19 (Codex) is the figure of a woman bearing the same characters on her back, one above another, as on the Manuscript plate. Just behind her is the figure of a man or male deity, which I judge from the long beard to be Kukulcan, or Zamna, bearing on his back the same two characters. From these facts and others which might be mentioned I am satisfied there was an intimate connection in the minds of this people between maize and this deity.

The two symbols in this form (Fig. 11), and also in reverse order, sometimes with and sometimes without the accompanying characters over them, are of very frequent occurrence in the Manuscript and Codex. That characters similar to the accompanying ones here shown are used in the Mexican Codices to represent cakes of bread or tortillas is well known; whether they have the same signification in this connection is a point that will be discussed hereafter.

FIG. 11.

Our next step will be to determine, if possible, which of the figures shown on these plates represent the *Uayeyab* idols. As we have already shown, there were, according to Landa, four of these, as follows: *Kan-u-Uayeyab*, for the Kan years; *Chac-u-Uayeyab*, for the Muluc years; *Zac-u-Uayeyab*, for the Ix years, and *Ek-u-Uayeyab*, for the Cauac years. We may assume, I think, without any fear of being in error, that the left-hand figures in the lowest division of the four plates of the Codex are intended as representatives of these images. They are the only ones placed on the stone-heap

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symbol; three of them are exactly alike, and to them the priests are offering the decapitated fowls.

Turning to the plates of the Manuscript we find the question more difficult to solve; first, because there are on each plate (except one) two figures seated on stone symbols; and second, because these figures are wholly different from those in the Codex. I think there can be no doubt that one of each of these pairs represents one of these idols. But which one? The one not seated on the symbol is that at the left of the lower division of Plate XXII. We may therefore assume that the white figure at the right with a sinuous line down the face, and seated on the stone symbol is the idol *Kan-u-Uayeyab* or *Chac-u-Uayeyab;* the former, if the ceremonies here shown refer to the commencement of the Kan year, the latter if they refer to the close. As the corresponding figure on Plate XXIII (Cauac year) bears on its head the Kan symbol it most likely represents the former, and that on Plate XXII the latter. The corresponding figure on Plate XXI varies considerably from the other two noticed; still there is sufficient resemblance to induce me to decide that it (the one at the right in the lower division) is the Uayeyab idol—*Chac-u-Uayeyab* or *Zac-u-Uayeyab.*

The figures on Plate XX present still greater difficulty, if possible, that on the right being wholly different from the others. As this plate refers to the Ix years we should expect this variation, having found such to be the case on the Codex plates, and would decide at once, notwithstanding this difference, that it represented the Uayeyab idol, were it not for certain facts to be noticed. During the festival of the Ix years one of the images made represented the god Yzamna or Itzamna. Whether this deity was identical with Kukulcan or not is a question in reference to which the authorities are undecided. If we assume they are identical, the beard on the figure at the right would lead us to conclude that it was intended to represent this deity. But, on the other hand, the bird with the protruded tongue seated on the head-dress of the figure at the left is one of the symbols of Quetzalcoatl, the equivalent of Kukulcan. We also observe that the Ara, the sun emblem, is immediately opposite the latter, toward which he is pointing his fingers, which is a well-known symbol of Itzamna. Taking all these facts into consideration, I conclude that the figure to the right is the Uayeyab idol,

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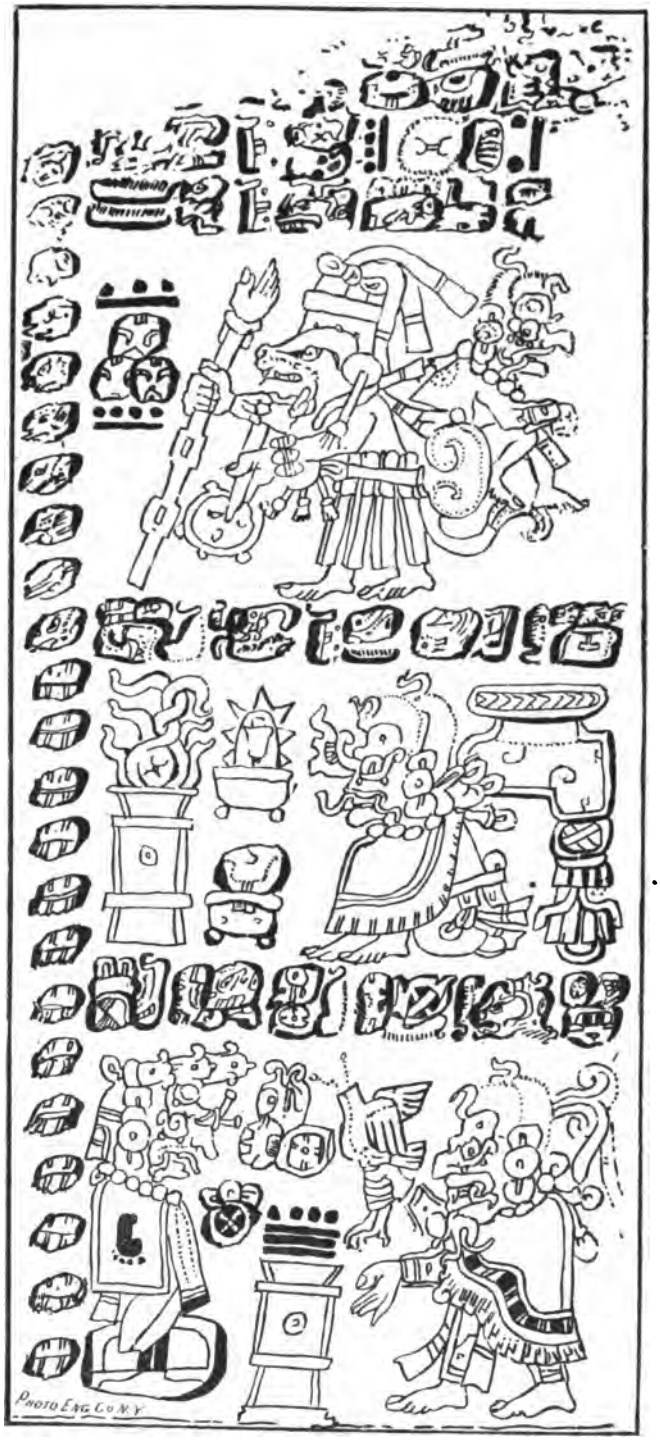

FAC SIMILE OF PLATE 25 OF THE DRESDEN CODEX.

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and that the one at the left represents Itzamna, whom I believe to be a distinct personage from Kukulcan. I have been unable to arrive at a satisfactory conclusion in regard to the opposite or left-hand figures on the other plates, except that on Plate XXIII, which I think represents the god of death.

We will now turn to the upper division of Plate XXIII and examine some of the figures contained in it. Near the left margin is the figure of a headless trunk marked with dotted lines and little circles; on it is the symbol of Caban and the figure of a machete. It is probable that this represents the body of the "dead man" which Landa says was carried during the festival of the Cauac years, as the dotted lines and circlets thereon correspond with that borne by the Chac in the upper division of Plate 28 of the Codex. As the festival of the Cauac years was observed during the closing days of the Ix years—those with which, according to the theory I have advanced, the lustres, ahaues, and cycles closed—I think it probable this figure is intended to signify the close of one of these periods, possibly the first, as this appears to be the idea signified in the Codex. I am fully aware of the difficulty of reconciling this explanation with the fact that this figure appears on the plate in the Codex which apparently refers to the Muluc years and is marked by the terminal days of the Kan years. But this fact will not warrant the rejection of my interpretation, as the error, if there is one, relates to the order in which I have arranged the years. I would also suggest that it is possible the calendars of the two works are not precisely alike—one may commence the series with a different year from that with which the other begins; in fact, the order of the plates in the two works seems to indicate this. It can scarcely be doubted that 25 of the Codex corresponds with XX of the Manuscript, yet that in the Codex is first while that of the Manuscript is the last of the four (the order here being, as I have shown, the reverse of the paging). The year in which the figure appears, according to the Manuscript, corresponds with Landa's statement, while that of the Codex does not. If we decide that the series of years commenced with Kan and ended with Cauac, the interpretation would still agree with the Manuscript and Landa, as then we would have to suppose that Plate XXIII refers chiefly to the close of the Cauac and commencement of the Kan years.

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In the lower left-hand corner of the same division we observe the figure of a deity, with a fiery red face, marked as the symbol for Ahau, bearing in his hand a torch and on his head what appears to be two little wings This I presume represents *Kinch-Ahau-Itzamna* (Kinch-Ahau, the lord of the mouth or eye of the sun or day), one of the idols made during the festival of the Ix years. Here it appears to be sinking out of sight below the western horizon, casting back its fiery rays as indicated by the torch. As it belongs to the Ix year, which is here brought to a close, it would of course be retired. The headless figure immediately above it, and the Caban or Cab which signifies "to descend" or "sink below," and the signification of the blue figure, as heretofore explained, all agree exactly with this interpretation. The wings [if such they be] on the head probably refer to the Ara, the sun token. The bird in the center, seated on the head-dress, may possibly represent or symbolize the "burnt bird," or "bird reduced to ashes" (the meaning of the original is very obscure), of which Landa speaks; the bill in the figure, it is true, is scarcely appropriate for a rapacious bird, which the *Kuch* appears to have been, but exact representations are not to be expected in this work.

The color appropriate to the Cauac year (the one assigned to the south), as indicated by the Maya word *Ek*, was black; according with this, the large figure at the right of the upper space, and the bird in the lower space, are of this color.

The serpent, we know, was a symbol used in the Mexican Calendar to denote a long period of time, especially the cycle of 52 years. It is also a prominent figure on these plates of the Manuscript, being found, in three of them, coiled under the clay vessels. (See both divisions of XXI, XXII, and XXIII.) Under each of the vessels in XXIII, and that of the upper division of XXII, it is in two coils; in the lower division of the latter the head is thrust out, apparently in compliance with the solicitation of the white personage to the right; on Plate XXI (both divisions) but one coil remains; and on Plate XX we see nothing more of it. What is it designed to represent on these plates? That it is a symbol of some period of time will scarcely be doubted; but what period?

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Turning to the plates of the Codex, we find that it appears there also on but three out of the four, being absent in both cases on the page referring to the Ix years. We also observe that on each plate of the Manuscript where the serpent appears the vessels bear Kan symbols.

It is evident, from what has already been shown, that the four plates in each work are intended to cover exactly one cycle. This is proven by the fact that on each the day symbols are repeated thirteen times. It is true that the period embraced by the plates of the Manuscript does not coincide with any one cycle, but it covers the thirteen different years of each of the four dominical days, giving them in regular order, thus making one complete cycle. The design in the Codex appears to be to indicate in a general manner the character of the feasts of the supplemental days only, and to show by the thirteen day-symbols that this is to be applied to all the years of the cycle; while the plates of the Manuscript are apparently designed to give the same general idea, but at the same time to refer to a specific period, and also that this period shall include the close and commencement of the two great periods; hence the years are specified in the latter, while they are not in the former; the latter also includes allusions to other festivals than those of the Uayeyab.

Taking for granted, then, that these plates are intended to cover one cycle, and that the serpent denotes a period of time, the natural presumption would be that it here represents a cycle, for, although we find evident allusion to the Ahau in these plates of the Manuscript, we see nothing of the kind in those of the Codex.[1]

We might very reasonably suppose those on the plates of the Codex indicated the year, but a close inspection of that on Plate 26 will show that it differs considerably from the other two, is evidently in a dying condition, and is marked with the fatal dotted line. I can see no reason for this difference if they were used to denote the year, and, aside from this, the fact that each one of the idols around which they are coiled is crowned with four leaves, indicating the four dominical days, would seem to forbid this interpretation, which certainly cannot be applied to those in the Manuscript.

[1] The reader will understand that the word "plates" in this connection is to be understood as meaning only the four of which I have been treating.

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If they refer to the cycle, then each coil will denote two Indications, a supposition with which the pyramid of four steps on Plate XXII (to which I will presently allude) agrees very well. A fact worthy of notice in this connection is that, proceeding with the pages in the order I have adopted, we find on XXIII, where Cauac is the ruling day, the two coils are complete; on the lower or closing division of XXII, where Kan is the ruling day, one coil is partially withdrawn; on XXI, where Muluc is the day, there is but one coil; and on XX, where Ix—the year with which the cycle closes—is referred to, there is none.

The most serious objection to this theory is that if any allusion to the Indications were intended there should be four coils instead of two, as there are four of these periods in a cycle. But the serpent may be used here only as the symbol of the cycle and the coils may have no particular signification; still I think they do have, as there are two to each on the Codex plates, and that they denote the two halves of the cycle. Landa mentions the fact that the two halves of the Ahau were specially noted by the Indians.

It is possible that on the Codex each serpent represents the series of years of one dominical day included in one cycle; that is to say, one column of a cycle as given in the previous tables. I have been led to make this suggestion from what I find on Plate 43 of the Borgian Codex.

Here we see four serpents,[1] coiled so as to form the sides of a square, and the four squares brought together so as to bring the heads to the center. On the body of each is a series of circles representing as I believe years; counting the small subcaudal one, there are exactly thirteen on each serpent.

Each of these serpent figures may represent an Indication, but the figure and the day signs in the spaces and the order in which they stand incline me to believe that they relate to the series under the respective dominical days. The five day signs in the spaces are doubtless the five added days—this can, I presume, easily be determined; but as I have not entered upon the study of the Mexican Calendar, and have not the proper works at hand for this purpose, I leave this for others to decide. In the upper right-hand square the inclosed figure is black, reminding us of the

[1] These are really monsters, as they are represented with anterior limbs.

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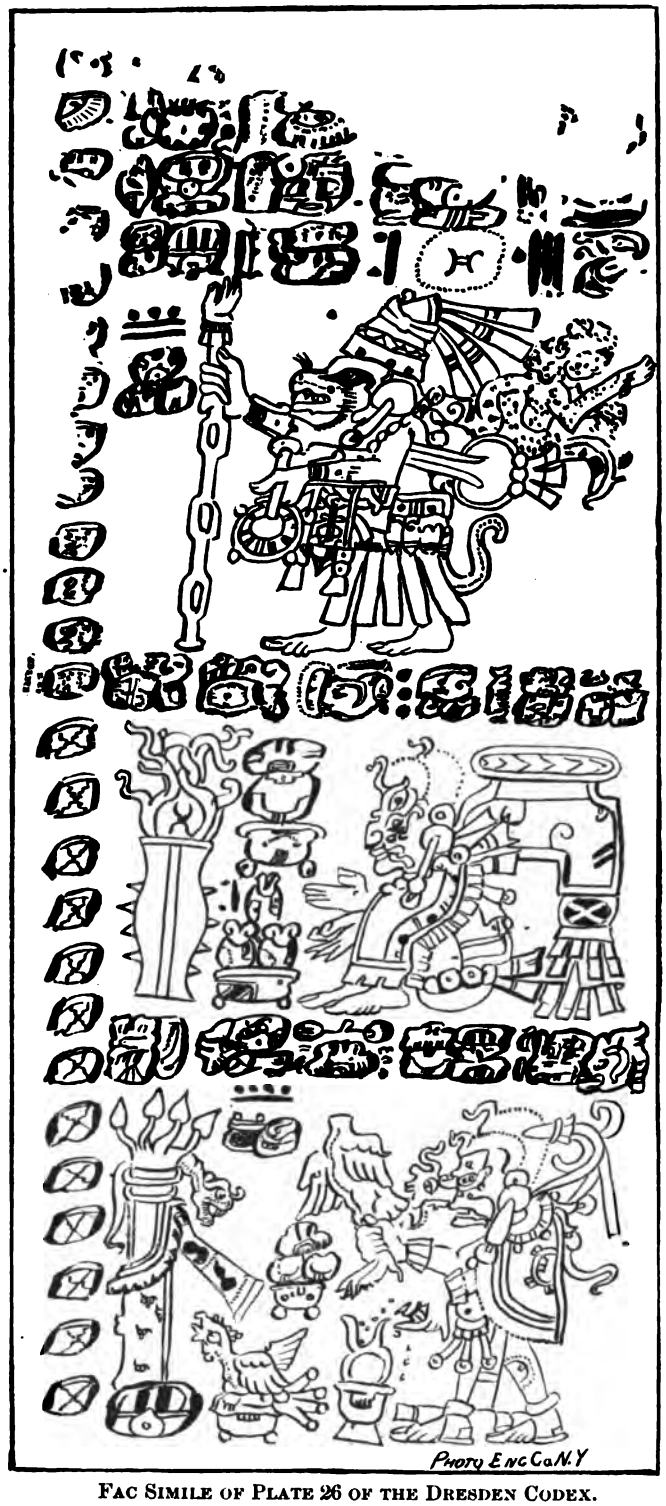

FAC SIMILE OF PLATE 26 OF THE DRESDEN CODEX.

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black figure in Plate XXIII of the Manuscript. In front of each inclosed figure, and immediately over the head of the serpent, is an urn. The snout of each serpent is crowned with a plume-tipped process. These resemblances, notwithstanding the otherwise great dissimilarity of the figures of this plate of the Borgian Codex to those of the other two works, render it quite probable that they relate to the same general subject.[1] I think it very probable that the serpent was sometimes used to symbolize the Ahau, as for example on Plates 33, 34, 35, and 69 of the Dresden Codex; that on Plate 33 to denote the 6th Ahau, that on 34 the 3d; that on 35 the 8th, and that on 69 the 10th. The lustres are evidently indicated on the last by the colors.

Turning again to the plates of the Manuscript, we notice the figure of an animal of some kind mounted on the right-hand personage in the upper division of XXI, XXII, and XXIII. The peculiar form of the eye shows these to be quadrupeds. They are doubtless mounted on these individuals to show that they are Chacs, corresponding with those in the upper division of the Codex plates.

We may as well call attention here to the fact that several of these things which appear on the other plates and seem to be equally applicable to all the years alike, are wanting on Plate XX, which relates to the Ix years. For example, the serpent is wholly wanting here; there is no animal denoting the Chac, and one at least of the clay vessels is missing. What does this signify? I confess that I am somewhat at a loss how to account for it, but, from my examinations and what has been ascertained, am disposed to explain it by the fact that Ix is the closing year of the lusters and cycles, and that the things mentioned, being symbols of one or the other of these periods or depending upon them, properly disappear with this year. If this view be correct, it will probably enable us to assign a signification to the large (supposed) red-clay vessels placed on the serpent coils in Plates XXI–XXIII. *Uayeb-haab* or *Uayeyab* (the latter is but a contraction of the

[1] In a pamphlet by Sr. J. M. Melgar, of Vera Cruz, entitled "A comparative view of the symbolical signs of the Ancient Systems of Theogony and Cosmogony, and those existing in the Mexican MSS., as published by Kingsborough, and the alto-relievos on a wall in Chichen-Itza," 1872, which Dr. Foreman, of the Smithsonian, has very kindly translated for me, I find a somewhat different interpretation of this plate of the Borgian Codex. This will be found in my Appendix No. 2.

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former) signifies the "bed of the year." As the vessels are placed on the serpent, and hence cannot represent incense-burners, it is not impossible that they are symbols of the idea expressed in these Maya words.

The character which, according to Landa is the hieroglyph for the letter *u*, which in Maya signifies "vase" (also "moon"), is common on the vase-figures throughout the work; but on these vessels we notice parts of other characters which together with the one given may be the symbols for *Uayeyab.* This I admit is a mere supposition, but it does not appear to be a forced one; moreover, the following explanation by Perez may serve to strengthen it: "They called them [the added days] also *uayab* or *uayeb-haab*, which may be interpreted in two different ways. The word *uayab* may be derived from *uay* which means 'bed' or 'chamber,' presuming the Indians believed the year to rest during those days; or *uayab* may equally be derived from another signification of *uay*, viz: 'to be destroyed,' 'wounded,' 'corroded by the caustic juice of plants,' or with ley and other strong liquids."[1]

I think it probable that these are cinerary urns, given as symbolic representations of the idea that the years have closed—are dead—and as the ashes of the dead rest in the urns so the ashes of the years may be said to rest in these vessels. This idea appears to be borne out by the fact that the vessel in the middle division of Plate 28 of the Codex, which appears to correspond to these of the Manuscript, has on it the figure of cross-bones, on the top of which are placed three Kan symbols.

Stephens in his "Yucatan" mentions the fact that it is the custom of the Indians to gather up the bones of the dead and preserve them in baskets, boxes, and other similar vessels. He mentions one case where "they were clean and bright as if polished, with the skull and cross-bones in front, the legs and arms laid on the bottom," &c.[2] It is more than probable that this custom was handed down from ancient times.

What the Kan symbols contained in these vessels signify is a question that puzzles me, and which I have so far been unable to answer satisfactorily. In the Manuscript we see three in both vessels of Plate XXIII; three in the upper and two in the lower division of Plate XXII; also three in the upper and two in the lower division of Plate XXI, but the top one

[1] Appendix to "Stephens's Yucatan," I, 437.

[2] Vol. I, p. 417.

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in the upper is surrounded by a heavy black border, while in the lower a black bird appears to be in the act of devouring a third, presented to it by the white personage at the right. On Plate XX there are two in the similar vessel in the lower division, and two connected with another character in the upper.

Turning to the Codex, we find the arrangement, so far as these characters are concerned, quite different. On Plate 25 we see but one, and that in the middle division; on 26 one in the middle and two in the lower division; on 27 two in the third or lowest division, with the figure of a fish upon them; on 28 three in the middle, above the cross-bones. If the vessels are to be considered as cinerary urns, figuratively holding the ashes of the dead years, these Kan symbols must be in some way connected therewith, but the numbers on the different ones cannot easily be made to agree with any of the periods of the calendar. Possibly they may simply represent ears of maize or tortillas cast into these vessels. The fish placed on those in the third division indicate, as I believe, that here they are intended to represent corn or bread, for the position of the figure shows that it is meant for one of the offerings made to the idol, which Landa says consisted of "drinks, dishes of food, meats, fish," &c. The vessel just above this, in the same division, probably contains fruits or gourds (calabashes).

If we suppose them to be time symbols, we may possibly find an argument in favor of interpreting them years in the fact that on Plate XXIII, where there are three in the vessel in the lower division, there is a fourth one on the head of the personage at the right, who we have supposed is the personage that represents the year. By counting this we have the four years. The one withdrawn and placed upon the head of the image represents (say) the Cauac year. This leaves three, as shown in the vessel. In the lower division of Plate XXII there are but two, another having been withdrawn to represent the Kan year. So far we meet with no obstacle to our interpretation; but when we come to Plate XXI we find there are three, and on Plate XX two, a fact which is difficult to explain on this theory.

Turning again to Plate XXII, we observe on the head of the individual at the right of the upper compartment two triangles. These remind

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us very strongly of the triangles on the outer circle of the Mexican calendar stone, and, although these are at the head of the animal, while those are at the tails of the serpents, I think it probable they have the same signification—the completion of the cycle. This opinion, I believe, is confirmed by the figures at the left of the same compartment. Here we observe two falling figures. The lower, pale brown, with cords on his arms and legs, is being dashed to pieces on the pyramidal pile, on which he falls, as shown by the blood which is streaming over it. The upper one is white, the side of the head marked with a sinuous line, as that in the lower right-hand corner of the lower division of Plate XXIII. That these two figures symbolize periods of time can scarcely be doubted, the dark one striking the pyramid that which is expiring. The four steps of the pyramid probably denote "indications" or "weeks of years," and, hence, all taken together represent the cycle. In the dark base we see a sigmoid character similar to that which Landa gives for the letter *N*, which may possibly be the symbol for the Maya word *Noh*, "grand." Here we see that one of the steps is black, which is the characteristic color of one of the four dominical days and of one of the four plates of the Manuscript. These facts, I think, are sufficient to warrant us in assuming that the whole pyramid represents the cycle, and is, no doubt, the "monument" raised at the termination of this period, in reference to which Perez makes the following remark: "This period of fifty-two years was called by the Indians *Katun*, and at its conclusion great feasts were celebrated, and a monument was raised, on which a large stone was placed crosswise, as is signified by the word *Kat-tun*, for a memento and record of the cycles or Katunes that had elapsed."

The two falling figures probably represent years, the dark one the closing year of one cycle or other period and the white the first of the following. I am led to this conclusion from the strong resemblance of the white figure to those in the lower right-hand corner of the lower division of Plates XXII and XXIII, which I have supposed represent the Uayeyab idols.

At the top of the left-hand, or day, column of Plate XX, and elsewhere in these four plates, we find this unusual red character

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FAC SIMILE OF PLATE 27 OF THE DRESDEN CODEX.

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sometimes with and sometimes without dots over it. Over the Ix column—Plate XX—there are two of these characters, the upper with three dots over it, the other with one. In the upper edge of the upper space of the same plate there is another without any dots over it. Those over the Muluc column—Plate XXI—are too thoroughly obliterated to be made out, but in the upper space of this plate we see a very distinct one with two dots over it. There are none over the Kan column of Plate XXII, but in the upper space there appears to be one, though too badly defaced to be made out with certainty. There is one over the Cauac column—Plate XXIII—with one dot over it, and in the upper space another, with two dots over it, above which is another in black, but reversed, and without dots. On the title page there are two lines of somewhat similar figures, but presenting some differences, which render it doubtful whether they have the same signification as those on the four plates.

There can be but little doubt that these characters are used here to denote certain periods of time. But what periods is a question I have so far been unable to answer satisfactorily. I will therefore postpone the discussion of this point to a subsequent page.

In the broad line separating the two divisions of each plate we observe certain square characters, some of which are readily recognized as day symbols. Those on Plate XXIII reading from left to right are—first, *Ezanab;* second, *Akbal;* third, the character which Brasseur says stands for *M*, and fourth, possibly a variant of *Lamat.* On Plate XXII, reading in the same direction—*Lamat* (?), *M*?, *Ezanab*, and *Akbal;* on Plate XXI, *Ezanab*, possibly a variant of *Been*, *Akbal*, *Lamat*, and (?); on Plate XX, *Been*, *Akbal*, *M*?, *Ezanab*, and *Lamat.* Two only in each line can be determined with any degree of certainty. These days are the closing ones of the different years, and are very appropriate in this place, and bear the same relation to these plates as those in the columns of the Codex do to those plates. Their position here also confirms the view I have heretofore incidentally advanced, that the upper division of these plates relates chiefly to the closing days of one year and the lower to the commencement of the following. The character which I have denoted by the letter *M* is the same as that which I have interpreted as designating "the north," except that it is without the prefix.

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I strongly suspect that it is the symbol for *Am*, the sacred stone by means of which they cast the horoscope, and which was doubtless the same as those named by Landa *Acantun*. The loop or knot on Plates XXI and XXII probably signifies the tying of the years, the close of one cycle or other period and the commencement of another.[1] There are but two of these, and they probably correspond with the figures on which the Chacs in Plates 27 and 28 of the Codex are walking. These appear to be bundles of cords or reeds bound at four points, representing the four dominical days (the four years), each representing thirteen years of the cycle, or possibly only one year of the luster.

Plate XX, which has Ix as the dominical day, appears to bear one or two of the tokens mentioned by Landa in his description of the festival of the Cauac years. This author remarks that, "after they have placed the images in the temple, they perfume them, as is their custom, and present to them two pellets of resin from a tree called *kik*, for the purpose of burning them, also some iguanas, bread, a mitre, a bouquet of flowers, and a stone which they hold in great honor." We see projecting from the head-dress of the figure in the lower right-hand corner of the lower division what appears to be a flower. In the upper division we see at the left an individual burning incense. In the corresponding plate of the Codex (25), middle division, is this figure (Fig. 12), which I have concluded is a symbol of the particular incense here mentioned.

FIG. 12.

[1] It resembles the Mexican character for the day *Ollin* or "Earthquake."

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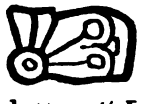
CHAPTER IV.

SUGGESTIONS AS TO THE PROBABLE MEANING OF SOME OF THE FIGURES ON THE OTHER PLATES.

PART FIRST OF THE MANUSCRIPT.

Plates II to VII of the first part appear to relate to one general subject, if we can judge of this by the figures and symbols, but what that general subject is I am as yet unable to determine positively, but am of the opinion that they relate, in part at least, to the festivals and profession of the traveling merchants.

The first division of Plate II contains two figures. The one to the left, a quadruped upon a brown ground, has its hind feet upon an oblong figure, apparently a stone, holding by its fore feet to a cord which passes round the object on which its hind feet are placed. A machete is plunged into the back, forming a great wound, from which we see the blood flowing out. The character on which he stands is marked with the trembling cross, which signifies "Ezanab" or "flint." I think it more than probable that this is intended to denote the sacrifice of this animal. It was the custom to sacrifice a dog at the merchants' festival, but it is doubtful whether this figure is intended to represent a dog.

A similar figure and with similar accompaniments is found in the upper division of Plate III. I find among the characters immediately above both of these, this one.  The right-hand portion appears to be Landa's character for the letter "*L.*" If we suppose the inscription to have any reference to the figures in the spaces, we may give this two possible interpretations—the first *Ol*, "heart," probably denoting the sacrifice of the animal or person by the usual method of taking out the heart. Or, supposing

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the first part of the compound character to be simply a prefix or a particle, the chief character may indicate the Maya word *Le*, signifying "a cord," "a lasso," or cord with a slip knot. I find the same character over the middle figure of the second division of this plate (II), also, slightly varied, over the left figure of the first division of Plate III. In each case we see the cord and also the indications of sacrifice. The same character is also found immediately above the open breast of the sacrificed individual on Plate 3 of the Dresden Codex, but in this case we also see cords around the hands and feet.

In the right-hand compartment of the upper division is a squatting human figure in black on a blue ground, doubtless representing some deity. He has a fiery red mouth and a very prominent nose, and is holding by the hand a cord, which passes round a character at his feet, probably representing a peddler's pack. On his head he bears an interlaced or cross-hatched figure as a head-dress. This figure I think represents the ancient divinity *Chicchac-Chab* or *Chichac-Chob*.[1] The cross-hatched character on the head appears to be used to indicate the sound *tzi*, *zi*, or *chi*, and is probably placed here to denote this deity. Similar figures are found in various parts of of the Manuscript, as, for example, on Plates IV, V, VI, VII, XIX, XVII*, XVIII*, XXII*, XXIII*, XXV*, XXIX*, XXX*, XXXI*, and XXXII*.

There appear, in fact, to be two different personages represented by these figures, as may be seen by reference to the upper division of Plate VI, where the two are brought face to face. The only difference observable is in the form of the eye. According to Landa, the Indians, during the festival of the Cauac years, made four idols named *Chicchac-chob*, *Ekbalam-chac*, *Ahcan-Volcab*, and *Ahbuluc-Balam;* the first of which is doubtless one of those referred to. It is also possible that some of the figures on this group of plates refer to others of these four deities.

In the middle division of this plate (II) is a stooping human figure, with his arms bound behind his back with a cord, and a kind of yoke on the back of his head The edge of a machete is descending upon his neck as if to sever his head from his body. That this figure is intended to show that the individual is about to be slain can scarcely be doubted, as we see,

[1] I am aware that *Ekchuah* was the merchant's patron.

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FAC SIMILE OF PLATE 28 OF THE DRESDEN CODEX.

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by turning to the middle division of Plate III, the same person, although still represented as standing, a headless trunk and covered with blood, while in close proximity is the fatal machete.

Above the bound figure we find the character heretofore given, which we have supposed may be the symbol for *Ol*, or "heart," and, if so, tends to confirm the idea indicated in what has been said concerning these figures. Be this as it may, we have here, undoubtedly, indications of human sacrifice. The mode indicated may not be exactly what we may have been led to expect from what has been stated by the old authors, but this does not necessarily prove our interpretation wrong. It is a significant fact that on the third page of the Dresden Codex we see human sacrifice distinctly shown. Thus it appears that each of these manuscripts bears the evidence of this horrible custom.

As bearing upon my interpretation of these characters, I call attention to the fact that they are also found on Plate 3 of the Codex, in connection with the figure denoting human sacrifice.

The white left-hand figure in the third division (Pl. III), holding in his right hand the symbol of *cu* or Cauac, and in his left a spear head, represents, as I judge from the markings and this accompanying character, , one of the gods of death or underworld.

Plates III to VII, taken together, appear to represent among other things a journey of some kind, probably the journeyings of traveling merchants or peddlers. This is indicated by the marks of footsteps and by the figures of individuals with staves in their hands and packs on their backs, which are bound with cords.

The two individuals in the upper division of Plate VI appear to be in the act of producing fire by whirling a stick between the hands with the point pressed on a piece of wood, as was the custom.

The figure in the lower division of this plate is interesting chiefly on account of the peculiar head-dress of the large central figure. This, which is shown in the annexed cut (Fig. 13), represents a couch or seat in the form of a double-headed animal, on which is placed the head of a deer. This bears such a striking resemblance to the double-headed

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couches or seats found in the ruins of Yucatan[1] as to induce us to believe that they have the same signification in both places, or that the figure in our plate refers to that which was represented in the older sculptures and paintings. The peculiarity in the figure of our plate is that the personage seated on the couch is here symbolized by a deer's head, and that on the cheek of the right head there is one of the death symbols. Is the deer's head here a symbol of the personage represented as seated on the couch in the sculptured tablet of the Palenque palace, and the Beau Relief in stucco? We have no means by which to determine this, but it is my opinion it is.

FIG. 13.

I suggest, as a possible explanation, that this singular head-dress is a symbol used to denote the peninsula of Yucatan, or, rather, *Etel-ceh*, the name by which it was known in ancient times. *Ceh*, as is well known, is the Maya word for "deer." *Etel* signifies "companion," and *Etelet*, from "hand to hand" or "side to side." Hence it may be intended as a symbol of dominion.

This, I am aware, is a somewhat visionary guess, and I give it as such; still it is not impossible that it is substantially correct.

On the jaw of the head, looking to the right, is an imperfect character, which, from evidence found elsewhere in the Manuscript, I am satisfied is a variant of Cimi.

We find that the same deity represented in the second division of Plate VII assumes a different form. The scene appears to be an open, grassy prairie, leading us to infer that here the javelin is being hurled at game, although none is figured.

In the lower division of Plate VII, and extending into the margin of VIII, is a series of five similar blue figures, each seated on a large character like the one here shown.

[1] Bancroft's Native Races, vol. iv, pages 317, 318, and 329; Stephens's Yucatan, vol ii, page 182; Waldeck, plate xvii; Dupaix, plate xxvi (Plate 20, Kingsbury, iv).

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The black numerals not obliterated are as follows, and in the following order: 11, 10, 9. Is it not possible that these signify Ahaues? The head-dresses on three are similar to that seen so often throughout the work on the head of Tlaloc, and which, I presume, signifies the tying of the years. I merely suggest this as a possible explanation, although the order of the numerals is not the usual one.

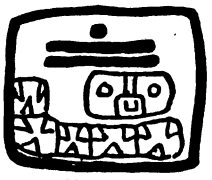

FIG. 14.

Plates VIII to XIX appear, from the figures, to relate to the chase. VIII–XIII are devoted almost wholly to figures of animals (mostly deer) caught in snares. It appears from these figures that the method of snaring animals was to fasten a cord to the top of a slender tree, bend it down, and fasten a slip-knot around a spring or trigger, so that when touched by the fore foot of the animal it would slip up and tighten, and thus hold up the fore part of the body. There can be no doubt that the elongate white stems to which the cords are tied represent trees or wood. If the nodes marked upon them were not sufficient to show this, a study of the similar figures throughout the work would satisfy any one on this point.

The curved figure at the foot of the deer in the second division of Plate VIII probably represents a kind of spring or trigger around which the slip-knot is fastened in such a manner that when touched above by the foot of the animal it closes or bends together, so that the knot slips off it and on to the leg.[1] I am aware that this interpretation is widely different from the profound explanation given by Brasseur, still I think it is as near the correct one.

The animal represented in the upper division of Plate IX is an Armadillo. It is evidently in a pit, into which it has fallen through the trap arranged for this purpose. We see no cord here, as none was needed.

The pit appears to have been lined around the sides with upright pieces of wood, to prevent the earth from falling in; then two layers around the top of these, and finally covered with a layer of sticks or small beams, through which a hole was made in the middle, and then pieces laid loosely on this, so that the ends met over the middle of the opening. The animal

[1] Herrera (Dec. iii, Bk. vi, chap. 3) says they killed their game with gins and snares. The Gentleman of Elvas speaks of a method of catching conies with snares similar to that figured in the Manuscript (Hackluyt Transl. ii, 183).

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passing over steps on these, and, tilting them, falls in. I introduce here a figure of this pitfall, an exact copy of that on the plate. We here see the method of joining the ends of beams together.

A similar figure, but on a smaller scale, is given on Plate XXII*. The crosses on the ends of the beams are parts of the character so often found on wooden articles. This is evident from the fact that the full character is found on the ends of the cross-beams in the figure on Plate XXII*. The probable signification will be given hereafter, in the chapter relating to the written characters.

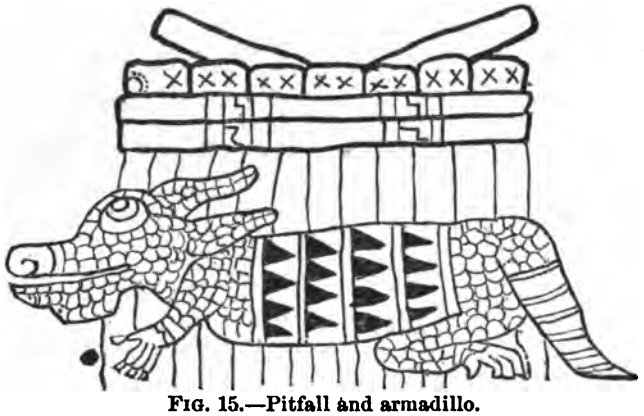

FIG. 15.—Pitfall and armadillo.

In the third space of this plate, and also in the second and third spaces of Plate XIII, there is an outline figure of a scorpion, and in each case the claw at the end of the tail grasps a cord to which a deer, rabbit, or fox is attached. I confess my inability to interpret these figures.[1]

In the left portion of the upper division of Plate X[2] is a broad transverse line containing characters similar to those in the line between the divisions of Plates XX–XXIII. The left-hand character (of the three) bears a strong resemblance to the symbol of the Mexican day *Ollin*, or "Earthquake," but here possibly represents the Maya day Ezanab, and the middle one, Been. The character to the right is the "death symbol," or symbol of the day Cimi. The red and blue scrolls which are attached to and hang below this line probably denote the supposed character of two different years or days, so far as they relate to the chase. It is a fact worthy of notice that on these six plates there are just *eighteen* of these captured animals, or one for each month of the year. We can readily understand why the festivals or religious observances denoted by these figures and the day and numeral characters are so numerous and occupy

[1] Sr. Melgar (*Comp. View, &c.*) suggests that it denotes the zodiacal sign *Scorpio*, and hence autumn. But such a supposition would imply a knowledge of Oriental astronomy not warranted.

[2] See Fig. 97.

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such a large portion of the Manuscript. The priests were fond of the savory venison hams which fell to them. In other words, it was a scheme on their part to use the religious fervor of the people to supply their larders with this choice meat.

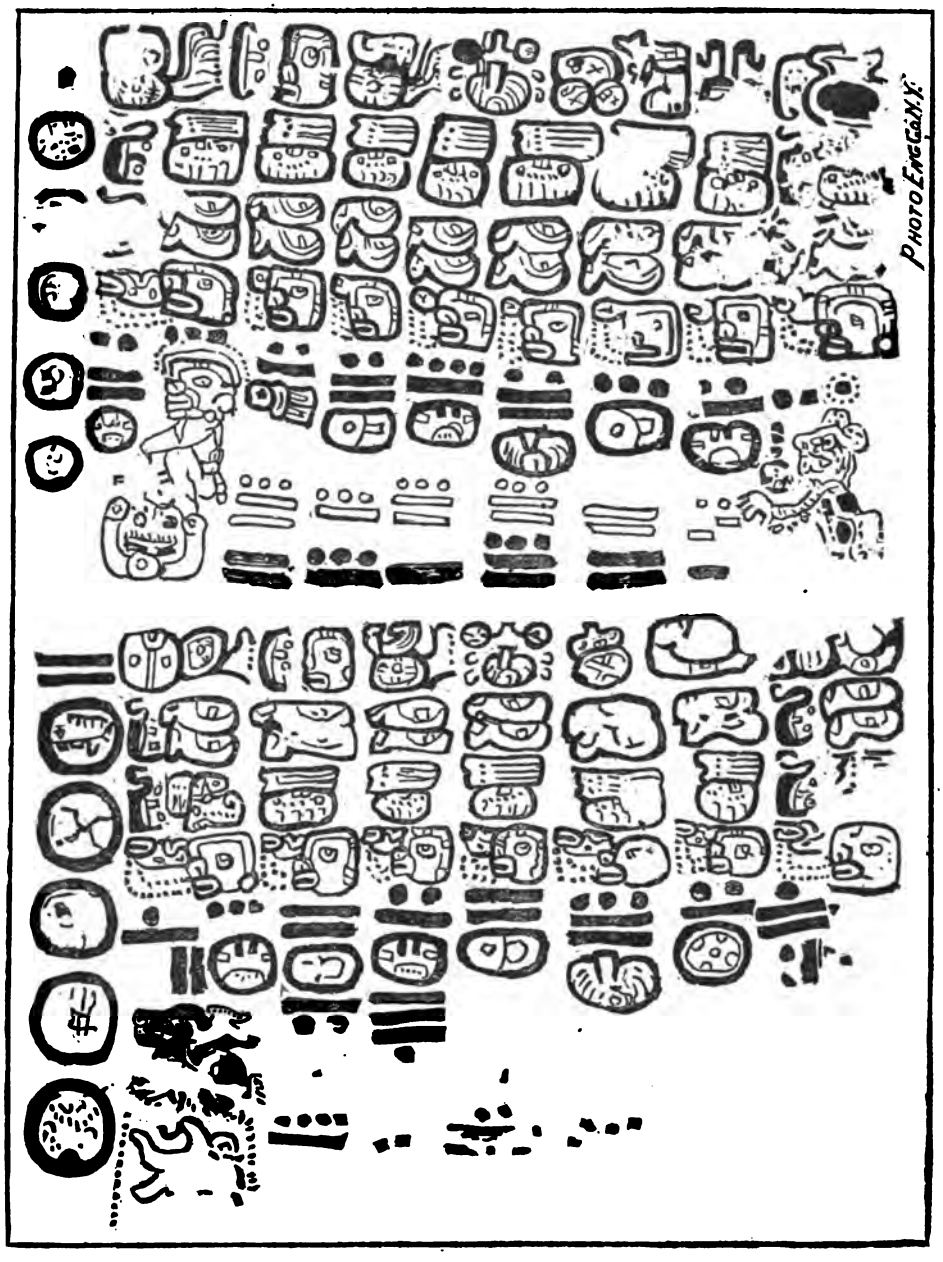

FIG. 16.

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Plate XIV—the middle and lower divisions of which are reproduced in Fig. 116—I take to be a ritual relating to the hunters' festivals. In the upper division we see two persons dressed as Chacs, and bearing the emblems of the festival to the temple or appointed place. The middle and lower divisions contain entire transverse lines of the same character repeated. If we take them in columns, instead of transversely, we will find that they differ from each other only in the top and bottom characters and the numerals. As an example, I refer to the third column from the left of the middle division (omitting from the count the usual day column at the left). The character at the top is the one already interpreted as signifying "the east"; three of the other columns have each one of the cardinal points, the rest of the characters being the same in each column and in the same order except the numeral and the character below it. The same is true in reference to the lower division. As these appear to designate mere repetitions, either of actions or words, varied slightly as to direction or number, I conclude that, taken together, they form a ritual for the ceremonies that relate to the chase.

Plates XV–XIX appear to represent tokens of hunting scenes and the ceremonies of the hunters' festival In the upper division of XVII, XVIII, and XIX we see the hunters returning from the chase, some bearing their game, others their weapons, and others flowers in token of success.

On Plates XV and XVII we see some of the game left behind for the vultures, which are devouring it. The middle division of XVI and XVII relate to the same subject; the left figure in the latter is represented as being bitten by a rattlesnake, one of the dangers to which they are subject while pursuing their calling. The figures at the right of the upper division of the same plate represent a master punishing his slave or follower; the difference in the belt anklets and dress showing the difference in condition.

It is more than probable that these figures are to a certain extent cabalistic and also that it is a part of the ceremonies of the festival to represent these incidents of the hunter's profession.

The large figure in the middle division of Plate XV I presume represents an idol, made for the occasion, in the form of a deer. If so, we see here a strong indication of phallic worship.

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In the lowest division of Plate XVII we observe a woman piercing her tongue with a maguey leaf, while in front is an incense-burner.

The two figures in the upper division of Plate XIV are doubtless Chacs selected for the occasion, who are carrying to the festival the implements of the chase and a sun image. The character on which the figure in the lower left-hand corner, middle division of the same plate, is standing, is probably a representation of the trap, or rather trigger, used in snaring game.

We observe that the left-hand figure of the lower division of Plate XVI is bearing in his hands a Kan symbol on which is placed a deer's head. We see exactly the same combination in the fifth transverse line of the title-page—a deer's head on a Kan symbol, emblems of their chief means of subsistence, maize and venison.

The figures in the middle division of Plate XVIII are evidently symbolical, as the positions are unnatural. I am inclined to believe the upper of the two figures denotes a supposed phantom, which, according to the superstitions of the Indians, flew through the air, destroying game as it passed. This is a mere supposition based wholly on the figures themselves, yet one that I think is warranted.

The figure in the lower division of this plate (XVIII) probably represents a priest clothed in animal skin, or an idol.

The black and white figures in the middle and lower division of XIX are grinding paints to be used in their ceremonies. The black is the same personage as the right-hand figure in the upper division of Plate VI (Chic-chac-Chob). The white one in the middle division is a personage we frequently meet with on the pages of this work and in reference to which I will have more to say hereafter. The white figure in the lower division is certainly the same as those on Plates XXII and XXIII, which I have decided represent Uayeyab idols. It here no doubt signifies a priest dressed to represent this idol.

Plates XXIV–XXVIII appear to relate to one subject—the rainy season, or rains, storms, clouds, &c. I think it quite probable that pictures of this kind seen by the early writers on the manuscripts which they inspected, were the ones they supposed related to the great floods which inundated that country.

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From a careful study of them I conclude they are of general application, and refer simply to the storms, clouds, &c., of the rainy season of the year, and not to any particular event.

As each of these plates is complete in itself, there is nothing in them, except the subject treated of, to indicate the order in which they are to be taken; but this is too uncertain a guide for us to base any confident opinion upon. All I can say on this point with confidence is that XXIV and XXV appear to relate to severe and destructive storms, and XXVI and XXVII to beneficial and fertilizing rains. The figures in the lower division of the first two I think indicate the formation or commencement of the storm. We see in both a young or small serpent, which, I think, is here the symbol of a cloud. That on Plate XXV is a rattlesnake, indicating its deadly character, as does also the death symbol near by. The apron of the great, robust female is cross-hatched—which here may signify *Zih*, "origin" or "birth"—and denote that the serpent, which is issuing from behind it, is in process of birth. The character held in the right hand is *Ik*, "breath," "wind," or "spirit"; the blue lines from the mouth, which strike against the falling figure with the dead eye, denote the fierce storm on its errand of destruction and death.

The beam shooting out from the eye may possibly denote lightning, though in the similar figure on Plate XXVII this appears to be indicated by the red dots in the bound serpent on the head. The intention appears to have been to indicate the Maya equivalent of the Mexican female deity, *Chalchihuitlicue*. This deity, according to Sahagun, was the sister of the Tlalocs. "She was honored because she had power over the waters of the sea and of the rivers to drown those that went down to them, to raise tempests and whirlwinds, and to cause boats to founder. They worshiped her, all those that dealt in water, that went about selling it from canoes or peddled jars of it in the market. They represented this goddess as a woman, painted her face yellow, save the forehead, which was often blue, and hung round her neck a collar of precious stones, from which depended a medal of gold. On her head was a crown of light-blue paper, with plumes of green feathers and tassels that fell to the nape of her neck. Her earrings were of turquiose, wrought in mosaic. Her clothing was a shirt

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or upper body garment, clear blue petticoats, with fringes, from which hung marine shells, and white sandals. In her left hand she held a shield and a leaf of the broad, round, white water-lily, called *atlacuezona*."[1]

Clavigero makes the following statement in regard to this goddess: "*Chalchiucueje*, otherwise *Chalchihuitlicue*, was the goddess of water and companion of Tlaloc. She was known by some other very expressive names, which either signify the effects which water produces, or the different appearances and color which it assumes in motion. The Tlascalans called her *Matlacueje*, that is, clothed in a green robe; and they gave the same name to the highest mountain of Tlascala, on whose summit are formed those stormy clouds which generally burst over the city of Angelopoli. To that summit the Tlascalans ascended to perform their sacrifices and offer up their prayers. This is the very same goddess of water to which Torquemada gives the name *Xochiquetzal*, and the Cav. Boturini that of *Macuilxochiquetzalli*."[2]

The interpreter of the Codex Telleriano-Remensis says: "*Chalchiutli*, who presided over these thirteen days, saved herself in the deluge. She is the woman who remained after the deluge. Her name signifies, 'The woman who wears a dress adorned with precious stones.' They here fasted four days to Death. They painted her holding in one hand a spinning-wheel and in the other a certain wooden instrument with which they weave; and in order to show that of the sons which women bring forth, some are slaves and others die in war, and others in poverty, they paint her with a stream, as if carrying them away, so that, whether rich or poor, all were finally doomed to perish."[3]

We may therefore, I think, safely assume that the figure in our plate is intended to represent the Central American or Yucatec goddess *Xnuc*, who appears to be an equivalent for the Mexican female deity described, and that here, at least, she is but a symbol of the mountain range where the storms were formed, and from whence they rushed down into the valleys and plains below. Whether the large figure in the lower division of Plate XXVII is intended to represent the same deity is somewhat uncertain, but

[1] Bancroft's Native Races, Vol. iii, p. 368.
[2] History of Mexico, Vol. i, p. 252, Cullen's Trans.
[3] Kingsborough's Mex. Antiq., vi, p. 120.

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judging by the blue hair, blue ear-circle, the bound serpent on the head, and the similarity in the form of the mouth, anklets, and wristlets, I am disposed to believe it is, notwithstanding the material differences in other respects. The mouth of the latter, the peculiar form of which is more distinctly shown than in the former, reminds us very strongly of that of the symbol of the Mexican day *Ehecatl*, "wind," as given in the various Codices. I am disposed to think that the figure in Plate XXV represents her as the storm-brewing goddess, while that in Plate XXVII shows her as the giver of beneficial and fructifying rains. In the former the eye simply shows the lightning flash, while in the latter it is surrounded by the curved Tlaloc sign, or what is supposed to be the sign of the Tlaloc eye, though certainly not limited to this deity.

The figure in the lower division of Plate XXIV is evidently intended to express the same idea as that in the lower division of XXV; but I am at a loss to decide what deity is denoted. A god with four hands, as here shown, is an anomaly in Mexican and Central American mythology. I have failed to find any such represented in the Codices, though I have looked through them somewhat carefully for this purpose. Nor have I found any mention of such an one in any of the works I have at hand.

Prof. Edward S. Holden thinks he sees four hands to the figure on the Leyden Stone, but I must confess I have been unable to find more than two which appear to belong to the principal personage. He is of the opinion that the figure on our plate is intended to represent the Mexican god of war, *Huitzilopochtli*.[1] It is possible that this surmise is correct, as it agrees in several important respects with the dark figure in the upper division of Plate XXV, which I think beyond doubt represents this deity.

As the reader will find the characteristics and symbols, and also a very reasonable and probably correct interpretation of these given at length by Bancroft in his Native Races, I will omit the mention of them here. I only add that here we see the feathers, the shield, the snake belt, the arrows and spear, and everything, even to the attitude, that betokens a warlike deity. The accompanying serpent, which here clearly denotes a cloud, is not wanting; the rain pours down in fearful torrents, and on each side is the

[1] "Studies of American Picture Writing"; in Annual Report of the Bureau of Ethnology.

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death symbol. This god we know was a companion of, or, rather, accompanied by, Tlaloc, whose figure we see by turning to the adjoining Plate XXIV. But here, instead of being in his favorite blue, we see him clothed in black and bearing on his arm the shield that forms one of the tokens of the war god. On this we see the symbol for *Ik*, "breath" or "wind," twice given, betokening the storm and the whirlwind. In his right hand the spear-hurler, or, as here used, the lightning symbol, while in front of him is the Uayeyab idol or figure representing the year, upon whose head the torrents are descending, and upon whom the angry Tlaloc appears to be venting his wrath. If a supposition, hereafter more fully explained, that this figure represents Zamna, or corn, prove correct, the signification of what is here shown is at once clear.

Above the head of the god, sailing through the air, is a batrachian, or frog-like animal, a symbol of abundant water.

The large character in the middle, which has the inner space blank, was doubtless intentionally left so. I am unable to guess its meaning, unless it be a time symbol of some kind. The transverse line of partially obliterated characters at the top are similar to those found in the middle transverse line on Plates XX–XXIII, which probably have the same signification here as there.

As before remarked, Plates XXVI and XXVII appear to belong together, and to refer to the milder and beneficial rains.

In the upper division of the former we see Tlaloc, accompanied by his four Chacs, the latter without any marks of distinction, as here the intention appears to be to represent them as rain-givers only. The former is shown here in his usual blue color, but the scorpion-like caudal appendage is uncommon, and, taken in connection with the plate on the loins to which it is attached, is, as I believe, a time symbol of some kind. We notice that the claw at the tip appears to clasp the single red numeral character surrounded by dots. In this space we also observe the symbols of the four cardinal points, one by each Chac.[1]

[1] I have been in considerable doubt as to whether these minor deities are Chacs or Bacabs, as there appears to be much confusion in the writings of the old authors in reference to them; but have decided to apply the name Chacs to those which appear to be related to the rain gods. I think it probable that the two terms apply to the same deities.

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The figures in the lower division of this plate, I think, are easily interpreted. Here is the cloud, or moisture, represented in the form of a serpent, with a Tlaloc head to denote its beneficial and fertilizing influence. Tlaloc, who has been riding upon it, now starts upon his descent to earth, bearing upon his back the symbol of abundance of food—a vase filled with corn and a vine loaded with fruit.

I am aware that I have heretofore referred to the serpent as a symbol of time, but this diversity in the application of this symbol has been recognized by others. Bancroft, after a thorough consultation of the numerous authorities in his extensive library, remarks, in speaking of the attributes of the Mexican god Huitzilopoctli: "Huitzilopoctli is also a snake god. * * * * If the snake signifies in one case time, in another world, and in another instance water, or the yearly rejuvenation of germs and blossoms, the eternal circle of nature, divination, soothsaying, it is quite proper, for all these qualities are found united in the god."

The figures in the upper division of XXVII are very similar in character and signification to those just described. Here is the snake cloud floating along, the crimson underlining indicating either the lightning or the effect of the setting sun. On the head stands Tlaloc, while he pours out the rain from the inverted vase in his hands. On another part stands a goddess, possibly *Ixmol*, also pouring the refreshing rain on the parched earth.

The central figure in the lower division of this plate has already been alluded to and the conclusion reached that it is the female deity *Xnuc*, the mountain, or mountain range, from which the rains of that region mostly come. The chief parts of the figures in this division may be thus explained: The blue lines, the rain flowing out from the skirts and down the sides; the serpent, the embryo cloud on the summit, through which the lightning, represented by the red dots, is playing. Here we see the four Chacs, with their distinguishing marks upon them; also Tlaloc, with a singular headdress.

From a careful study of these four plates I conclude that XXV precedes XXIV, and that XXVII precedes XXVI, in other words, should proceed to the left in the order paged.

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Plate XXVIII appears to relate somewhat to the same general subject as the preceding group just described, but is not so directly connected with them as they are with each other. It seems, in fact, to belong between this group and the one which follows (in the order of the paging), and apparently precedes the former.

The chief objects of interest on this plate are the figures in the second and lower division. The larger figures either represent two deities closely allied and belonging to the same class, or are symbolic. As they are frequently met with throughout the Manuscript I presume they are recognized deities. In this place I think they represent the earth or soil, which, parched and dry in consequence of a severe drought, are here represented as looking up toward the heavens, as if supplicating rain upon the planted and sprouting maize, the emblems of which they bear in their hands. As will be noticed elsewhere, there are very strong reasons for believing that the lower figure, and probably both, represent gods of death, or that they are symbols of death. This agrees very well with the explanation I have suggested. The lower figure has in one hand the bread symbol, in the other that of sprouting corn. In the hands of that of the second division are smaller figures, bearing *Kan* characters, here doubtless used as corn symbols.

These smaller figures with the two-colored face, which will be found frequently introduced on the next five plates, certainly represent something of the utmost importance in, or bearing a close relation to, Maya agriculture.

Without stopping just here to give my reasons for the belief, I venture the opinion that they are here given as figures of the deity *Zamna*, or *Itzamna*, but with the—as I presume generally understood—idea, or belief, that *Itzamna* and maize were equivalents, or so closely related, that to figure this deity in connection with agricultural subjects was equivalent to figuring maize, or possibly seed in a broader sense.

The blue, serpent-like figure with purple margin in the third division of this plate (XXVIII) is possibly intended as the symbol of a floating cloud. The chac in front, Tlaloc resting quietly on one of the curves, the blue color and purple lining all correspond with this idea. But the Zamna

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figures and vegetable sprouts upon it do not agree with this interpretation. Still I believe it to be the idea intended.

Plates XXIX–XXXIII appear to relate entirely to agricultural pursuits, especially to the cultivation of maize, cacao, some vine, and possibly. cotton.

In this connection I would call special attention to the first (top) and second divisions of Plates XXX and XXXI, and the two Tlaloc figures in the lower division of XXXIII. In these we undoubtedly have the planting of seed, most likely corn, represented. The number of grains deposited in a place appears usually to be five, but occasionally six seem to be dropped. The opening or hole in the soil is made with a pointed wooden stick, always more or less bent or curved in the figures. According to Landa the custom of the native farmers was to make holes at regular intervals, and in each deposit "five or six grains" of maize. The number appears to be indicated in the plates, not only by the figures of balls dropped, but also by the spread fingers with knobs at the tips, showing that five was the established number. As further evidence of the correctness of this interpretation, the individuals represented on Plates XXX and XXXI, as engaged in this work, have their heads covered with a kind of matting or straw hat, indicating that they are in the sun, where the head needs protection. The character in this head-gear, as will hereafter be shown, probably signifies *ppoc*, "a hat" or "head-covering."

The similar operation represented in the lower division of Plate XXXIII, where Tlaloc, or a priest attired as this deity, is the planter, probably refers to the seed of some other plant, possibly the gourd or bean, or the leguminous plant figured in the second division of the same plate.

As I have expressed a belief that the figures with a two-colored face are given to represent Zamna, or Itzamna, one of the chief Maya deities or culture heroes, I will give here in part my reasons for this opinion.

First. As has been heretofore intimated, and as will hereafter be more fully shown, the Imix and Kan symbols are undoubtedly often used to denote bread and maize, and the word, or name, Itzamna has as its primary signification seed from which plants issue, the chief reference being to maize.

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Second. In the plates now under consideration the figures with the two-colored face appear to have some intimate relation to agricultural pursuits.

Third The Kan symbols and these figures are both represented as being attacked by quadrupeds, birds, and worms.

For example, on Plate XXIX, left-hand figure of the second division, we see a bird picking up the planted seed before it has sprouted; in the next figure to the right, same division, we see a small fox-like quadruped seizing it after it has sprouted; in the third division, same plate, and lower divisions of Plates XXX, XXXI, XXXII, and XXXIII, we see quadrupeds, birds, and worms attacking these supposed Zamna figures.[1] In the latter cases the intention was probably to signify that the plant was attacked by these enemies. The figure in the lower left-hand corner of Plate XXX shows three worms at different heights, probably signifying that the root, foliage, and fruit were attacked. The symbol *ca* in the eye of this figure may be considered a symbol of the cultivated calabash, though it is probably intended to signify that the plant (which I take to be a maize symbol) is dead, having been killed by the attacks of these insect foes.

I am aware that the explanations here given may be considered as somewhat overstrained, yet I am convinced that a close and careful study of these figures and all that can be found relating to them will end in leading others to the same conclusion. I may also add that the difference in the plants or varieties represented by these figures (if such be their signification) is shown by the eye and the marks on the head-dress, which here appear to refer to foliage. Possibly these differences have reference only to the different kinds of corn, but this I think is indicated by the color. See, for example, Plate XXX, third division, the yellow and white.

The peculiar birds in the third divisions of Plates XXX and XXXI may have reference to certain auguries; otherwise I can give no guess as to their meaning.

The next to the right-hand figure of the third division, Plate XXIX, probably represents some such plant as maguey, or yucca.

The lower left-hand figure of Plate XXXI I think simply represents

[1] The reader is referred to the quotation from Landa in reference to the ceremonies of the Cauac year (page 66).

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the act of watering the parched and dying maize plants. The Kan character here bears a sprout, or plant, which appears to be drooping and dying. Although the figure holding the jar is Tlaloc, I think this represents artificial watering, and not rain.

Plates XXXII and XXXIII appear to relate principally to the cultivation of cacao, cotton, and some climbing plant, and to severe drought.

The figures in the upper division I think relate to the cultivation of the cacao, either to the festival held specially by the planters, as described by Landa,[1] the particular part taken by them in the festival held to induce the gods to give them rain, or some incident in the process of cultivation.

Landa, in his description of their special festival in the month *Muan*, states that "they gave to each of the officers a branch with the fruit of the cacao." This is doubtless represented by the figures holding branches in their hands.

The figures in the second division of these two plates represent two different plants—one evidently a vine supported by a stake, just as grape vines are now supported, on which hang what appear to be pods, possibly beans of some kind. The other plant has a fruit represented by a little circle surrounded by a ring of dots, possibly cotton.

In the third division of these plates there are figures of fox-like animals bearing torches and leaping over a sleeping Zamna figure and an incense-burner. In the place of the eye is a character resembling that for *C* or *Chuen*. It is possible that it here stands for the Maya word *chocou*, "hot," or *chocoual*, "heat," and that the animal with the torches is a symbol of the scorching, burning heat of the sun.[2] This idea agrees very well with what we see in the division above (second). The figures here appear to represent cultivated vines, which are parched and dying from the effect of heat and drought. The Tlaloc head at the foot of one of these shows that they are also to some extent symbolic.

The third and fourth divisions of Plates XXXIV and XXXV evidently relate to painting the vessels, &c., alluded to by Landa, where he says that

[1] See Appendix No. 3.

[2] I call attention here to Landa's statement, heretofore quoted, in reference to the calamities to be expected in the Ix years, especially severe droughts. Also to the fact that an image of *Zamna* is introduced in the festival.

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"during this month (*Yaxkin*) they commenced to prepare themselves, according to custom, for a general festival which was celebrated in *Mol*, on a day which the priest designated, in honor of all the gods. They called it *Oloh-zab-kam-yax*. After the ceremonies and usual incensing which they wished to do, they smeared with their blue paint the instruments of all the professions from those the priest used, even to their wives' spindle and the doors of their houses." Here we see the priests dressed up to represent certain deities, with paint-pot in one hand and strip of yucca or maguey leaf in the other, applying the blue paint to their vessels (see Fig 25).

The following statement, by Col. James Stevenson, regarding the method in use among the Zuni Indians in making and applying paints to their pottery, will illustrate this: "When the pigment is properly reduced and mixed with water so as to form a thin solution, it is applied with brushes made of the leaves of the yucca. These brushes are made of flat pieces of the leaf, which are stripped off and bruised at one end, and are of different sizes adapted to the coarse or fine lines the artist may wish to draw. In this manner all the fine lines on the pottery are produced."

The figures in the upper division of these two plates perhaps represent priests with calendar wheels, determining the time at which the coming festival shall be held.

Those in the second division of Plate XXXV are probably in the act of preparing the paint.

PART SECOND OF THE MANUSCRIPT.

The title-page.—Although this is occupied almost wholly by characters, I think it is best to discuss its general import in this connection.

One of the first things that strikes us as somewhat singular, and as having some hidden meaning, is the fact that there are ten transverse lines (the numerals are not considered separately from the characters to which they belong) and seven characters or groups of characters in each line, making seventy in all—exactly the number of plates in the Manuscript. This arrangement by sevens cannot be accidental, and must therefore have had some particular meaning understood by the author and those for whose use the work was composed. That it does not refer to any of their divis-

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ions of time I think is clear from what has been shown concerning their calendar. When I first noticed this arrangement I was of the opinion that it indicated the number of different subjects treated of in the manuscript, and that the page should be considered in columns. But subsequent study has led me to doubt the correctness of the first part of this theory.

We observe that the first (top) line consists of seven day characters as follows (counting from left to right as numbered): *Ymix*, *Ik*, *Akbal*, *Kan*, *Chicchan*, *Cimi*, and *Manik*. Two are obliterated, but there can be no doubt that the missing ones are Kan and Chicchan, a conclusion I had reached before I had seen Rosny's work or Dr. Brinton's article. Brasseur supplied the fourth space with Ahau and the fifth with Kan.

In this connection I call attention to the fact that on the left-hand slab of the Palanque Tablet there are just seven double characters under the large initiatory hieroglyph. Omitting the four characters by the upright of the cross, the number of columns is an exact multiple of seven, whether we omit or include the single ones in the transverse lines above the heads of the priests.

Counting the large initiatory character as four—as it covers four spaces—and each double one as two, there are 245 characters on the entire tablet—an exact multiple of seven. It may be worthy of notice also that there are just seven characters in and immediately around the cross (included in the above calculation), viz, two on the upright, omitted in Dr. Rau's scheme; two each side, and one immediately to the left of the lower end of the arrow shaft (also omitted in Dr. Rau's plan); that there are 17 (=10+7) characters in each column of the outer slabs.

This may be accidental, and, as a rule, but little confidence should be placed in such calculations; but this, taken in connection with what we find in this line in the Manuscript, is sufficient to lead us to believe that this septenary arrangement is not accidental, but intentional, and has some specific, hidden meaning.

The tablet on the inner wall of Casa No. 1 (Stephen's Cent. Am., II, 343) has on it fourteen columns, each with ten characters, making 140 in all; but those on the outer corridor of the same casa have each twenty columns of twelve characters. The tablet of Casa No. 3, which appears to be

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closely related to the Tablet of the Cross, presents no such septenary arrangement, yet even here there are (counting long and short) seventeen columns, and in the extreme right and left columns just seventeen characters. I find this arrangement by sevens frequently in the Mexican Codices, but in most of these cases it is apparent that this results from the division of 13, as a corresponding arrangement by sixes accompanies, or is to be understood.

Returning to our plate, we may, as I think, make use of this septenary characteristic in determining some of the numerals that are partially obliterated. The red are sufficiently distinct except the missing ones in the upper line, in reference to which there is no question of doubt in the minds of students of this work; and the right-hand one of the line next to the bottom—the only question here being whether this is 18 or 19. Adding together all the numbers indicated by these red numeral characters (including the seven in the upper line), we find the sum to be 153, if we count the right-hand one of the 9th line 18, or 154 if we count it 19. As the latter number (154) is an exact multiple of seven, we conclude that this character is 19, and this agrees with the eroded space and the position of the dots over the remaining portion.

This septenary arrangement does not appear to hold good with the black numerals.

Returning to the first or top line we observe, as before remarked, that it commences with Ymix According to Landa the Mayas began the computation of their days, that is, their calendar, with *one Ymix.* We quote his language here, as it is somewhat singular:

"It is curious to note how the dominical letter [of the year] always comes up at the beginning of its year, without mistake or failing, and that none of the other twenty letters appears. They also used this method of counting in order to derive from certain letters a method of counting their epochs and other things, which, though interesting to them, does not concern us much here. It is enough to say that the character or letter with which they begin their computation of the days or their calendar is called *one Ymix,* which is this , which has no certain or fixed day on

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which it falls. Because each one changes its position according to his own count; yet, for all that, the dominical letter of the year which follows does not fail to come up correctly."[1]

It appears that the Chiapenec, Tzendal, Soconuscan, Quiche, and Cakchiquel calendars began the list of days with *Imox*, following it with Ik or Igh. This fact indicates a common origin of the calendars and of the people. It also renders the statement of some of the old authorities, that the names of the days were taken from the names of their deities and heroes, quite plausible. If this be true, we have possibly in the seven days here given the names of the seven chief deities; and the characters on the page are to be read in columns, each column having at the top one of these sacred names. The characters in the second line appear to accord with this view, as the first four, counting from the left, are those which I have attempted to prove indicate the four cardinal points. As a further examination of this plate would require me to enter into a discussion of the characters themselves I will defer further notice until I reach that subject.

If the figures furnish us with any evidence by which to judge of the contents, I decide without any hesitancy that Plates I*–X* of this part of the work relate to one general subject, to wit, the work and festivals of the apiarists. We may be somewhat surprised to find so large a portion of the Manuscript devoted to the festivals of this limited class, whose industry was generally considered of but minor importance except in certain localities. But here again, as I believe, we detect the cunning of the priests. This was a scheme to supply their board with honey. Moreover, it is quite probable this Manuscript pertained to a section where the production of honey was an important industry.

The objection to the theory that these plates relate to these particular festivals may be raised, that the insects represented by the figures on them are not bees, but beetles (coleopterous insects).

[1] Relacion de las cosas de Yucatan, p. 236. Y mucho de notar salga siempre la letras que es dominical en el primero dia de su año, sin errar ni faltar, ni venir a salir otra de las XX alli. Unsavan tambien deste modo de contar para sacar destas letras cierto modo de contar para sacar destas letras cierto modo de contar que tenian para las edades y otras cosas que aunque son para ellos curiosas, no nos hazen aqui mucho al proposito; y por esso se quedaran con dezir que el caracter o letra de que començava su cuenta de los dias o kalendario, se llama *Hun Ymix* y es este el qual no tiene dia cierto ni señelado enque craya. Porque cada uno le muda la propia cuenta y contado esso no falta el salir la letra qui viene por dominical el primero del año que se sigue.

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The wings and abdomen are, it is true, very much like the elytra and abdomen of beetles, but there are abundant reasons for believing that the opinion I have advanced here, which appears to have been held by Abbe Brasseur de Bourbourg, is correct.

First. We find nowhere any reason for believing that beetles played an important part in the religious ceremonies of the natives of Yucatan.

Second. We do know, from the most satisfactory evidence, notwithstanding the assertions of some writers to the contrary, that bees were abundant in some sections, and there is reason to believe that they were domesticated and reared for their honey; in fact, the collecting of honey appears to have been an important industry in some localities. I quote in proof of this statement from Clavigero, Vol. I, page 68:

"There are at least six different kinds of bees. The first is the same with the common bee of Europe, with which it agrees, not only in size, shape, and color, but also in its disposition and manners and in the qualities of its honey and wax. The second species, which differs from the first only in having no sting, is the bee of Yucatan and Chiapa, which makes the fine, clear honey of Estabentùn, of an aromatic flavor, superior to that of all the other kinds of honey with which we are acquainted. The honey is taken from them six times a year; that is, once in every other month; but the best is that which is got in November, being made from a fragrant white flower, like jessamine, which blows in September, called in that country Estabentùn, from which the honey has derived its name.

"The third species resembles in its form the winged ants, but is smaller than the common bee and without a sting. This insect, which is peculiar to warm and temperate climates, forms nests in size and shape resembling sugar-loaves, and even sometimes greatly exceeding these in size, which are suspended from rocks or from trees, and particularly from the oak. The populousness of these hives are much greater than those of the common bee. The nymphs of this bee, which are eatable, are white and round, like a pearl. The honey is of a grayish color, but of a fine flavor. The fourth species is a yellow bee, smaller than the common one, but, like it, furnished with a sting; its honey is not equal to those already mentioned. The fifth is a small bee without a sting, which constructs hives of an orbicular

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form in subterraneous cavities; and the honey is sour and somewhat bitter. The *Tlalpipiolli*, which is the sixth species, is black and yellow, of the size of the common bee, but has no sting."

He also adds, in a foot-note on page 68, the following statement: "The honey of Estabentùn is in high estimation with the English and French who touch at the ports of Yucatan; and I have known the French of Guarico buy it sometimes for the purpose of sending it as a present to the king."

Landa, in speaking of these festivals, makes particular mention of bee-keepers, or keepers of beehives.

Third. A careful study of these plates of the Manuscript I think will satisfy any one that the bee is the insect intended, although the figures are inexact.

Take, for example, the yellow figure in the middle division of Plate V*. The hair indicates that this is a female, and the long tongue shows it has a sucking apparatus.[1] There can be but little doubt that it is intended as a representation of the queen bee, or *Ahaulil-cab*, "the queen of bees."

As but few particulars in regard to the festivals of the apiarists have been recorded we have but little to guide us in an attempt to explain the figures in these plates. Landa states in reference to them that "In the month *Tzoz* the bee-keepers (or masters of the hives) prepare themselves for the celebration of their festival in *Tzec*. * * * * They had for their patrons the *Bacabs*, especially *Hobnil*. They made at that time great offerings, particularly to the four Chacs, to which they presented four plates, with pellets of incense in each one and painted round the border with figures of honey [honeycomb?], in order to obtain an abundance by this feast."[2]

Some of the figures appear to relate to the operations and incidents of the industry, as we have seen is true of those that refer to hunting and the hunters' festivals. We see here what appear to be their hives, either artificial—made for domesticated bees—or those cut from the tree containing the honey of the wild bees. Notice, for example, the figure in the hands of the female in the right of the lower division of Plate V*. The

[1] The bee is a mandibulate insect, but has an elongated tongue for extracting the nectar of flowers.
[2] See Appendix No. 3, E.

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upper part bears a different mark from the lower. The lower part is marked with the chief characteristics of the symbol for Cauac, which, as heretofore stated, when given in this way appear to signify that the thing upon which they are placed is made of wood. The characters on the upper portion resemble Caban, and here probably signify *Cab*, "honey," or *Cabnal*, "a hive of honey"; but it is proper to warn the reader that in other places, as will hereafter appear, it is used to denote the material of which a seat is made. I think it more than likely that here it refers to the vessel in which the honey is contained I presume this to be the case, because the individuals in the lower division of Plate IX* appear to have lifted the honey out of the vessel which lies at their feet; and we also see on the arm of the individual at the left of the lower division of Plate V* a figure marked with this same character. As he has a staff in his right hand he is probably returning from a successful bee-hunt, bearing his prize.

According to Landa the apiarists held two festivals during the year, one in the fifth month (Tzec), and the other in the eighth month (Mol); that is, in October and December. But according to the red and black numerals in these plates the one referred to appears to have been held annually, on the days Cib, Caban and Ezanab, in the 17th month—Kayab—corresponding to the first part of June. The female in the lower division of Plate V* is probably *Colebil-Xbolon-choch*, a goddess supposed to be the patron of the apiarists.

I would also call attention to the following additional items on these plates which are worthy of notice.

On Plate III*, upper division, next to the left-hand figure, we notice a kind of cross arising out of the body of a bee. On this cross are parts of a partially obliterated figure, which, upon close inspection, I decide without hesitation was that of a bird, reminding us of the bird on the Tablet of the Cross at Palanque and on crosses in several of the Mexican Codices. A foot, the tail, and parts of the wings are yet plainly visible. The right-hand figure of the same division also shows a plant in the form of a cross arising out of the body of a bee. I presume these relate to the requests to the gods for rain to make the plants produce flowers for the bees.

The figure at the right of the middle division of the same plate, which

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I take to be the god of death, appears to be in the act of breaking a vessel of earthenware, which, as the presence of the cross-bones indicates, is intended to signify death. The character between the parts of the broken vessel probably signifies "divided" or separated.

The figures along the lower margin of the middle division of Plates VII*, VIII*, IX*, and X* are chiefly representations of offerings made to the gods of the bee-keepers, as here we see the leg of a deer, bread, maize, &c.

The broad rectangular red figures in the middle division of the plates last mentioned, and elsewhere, from which the bees are flying, may represent hives which were suspended by cords. If not, I am wholly unable to guess their meaning.

As I have not been able to group the remaining plates of the Manuscript in a satisfactory manner, I will content myself with referring to such figures as I think I can explain, without attempting, except in a few cases, to show their connection with others.

The females and god of death figured on Plate XI* appear to be weaving, or making ropes. The figures themselves indicate this so plainly as to leave no doubt in my mind in reference to it. Moreover, some of the written characters, as I think, correspond with this interpretation.

It is probable the figures are also symbolic representations of human life. The female figure, I presume, is intended to represent the goddess *Ixchel*, who, in addition to her other powers or attributes, was supposed to preside over the formation and birth of infants. The interlaced or cross-hatched bundle before her accords with this idea, if my interpretation of this reticulate figure be correct—that is, that it signifies *zih*[1] or *zihil*, "birth" or "origin."

The presence of the god of death so close at hand and the death symbol before him in the second division, and twice in the lower division, are doubtless intended to signify the uncertainty of human life. The Ezanab character on the head of this god in this place—as this is not usual—must

[1] In writing Maya words I follow the orthography of the lexicons, but in referring to the signification am guided by what I suppose to have been the *sound*—for example, *tz*, *z*, and in some cases *ch* appear to be used to denote the same sound, or at least are the ruling elements of similar words having similar signification. As a matter of course the natives could make the distinctions in their pronunciation. I may also as well state here that I make no claim to a knowledge of the Maya language. I simply refer to the lexicons and grammar for such use as I desire to make of it in this paper.

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have some particular signification especially applicable to what is here symbolized. As some of the cognate words, especially where the aspirate is used, denote "certainty," it is possible that it is used here to signify the certainty of death.

Plates XII* to XVII* undoubtedly relate to the manufacture of idols. In the second division of XII* (see Fig. 34) we see the artists painting them with the slip of yucca or maguey leaf, as described by Colonel Stevenson, and also by Mrs. Stevenson in her admirable little pamphlet on the manners and customs of the Zuni Indians.

In the third division we observe the priests consecrating the implements and the wood out of which their wooden idols are to be made. These plates, I think, refer to the manufacture of both kinds of idols, those of burnt clay and those of wood. The wooden block is here represented by the oblong figure with Cauac characters on it; the implement by the twisted figure on or against the block. My reasons for believing that this is a tool of some kind used in working wood is that in the third division of Plate XXIII*, I see it in the hands of individuals who are evidently doing something to trees. The trees appear to be severed as though cut off by a rude saw of some kind.

The figures in the second division of Plates XIII* and XIV* probably represent the idols in the kilns, or in their positions for baking; what the birds on them signify I am unable to say; possibly they relate to auguries.

The figures of bent trees in the third and lower divisions of Plate XIII* may denote the temporary cabins in which they worked.

The figures in the lower division probably represent what Landa alludes to when he says, "where they placed the wood with a great urn (tinaja) for to keep shut up (or inclosed) the idols all the time they were at work upon them."[1]

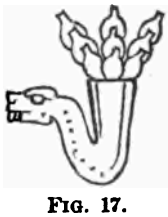

FIG. 17.

We see here the priests offering incense in a singularly shaped burner (Fig. 17) over these unfinished idols.

The wood of which the images were formed was probably placed in

[1] See Appendix No. 3 H.

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these urns and steamed, in order to soften it, or, after carving, to give the images themselves the desired color.

The attention of the reader is called to the figures on which the individuals in the upper division of this and of Plate XIV* are seated. The characters with which they are marked denote, as I believe, that they are wooden seats or platforms.

In the left-hand compartment of the third division of Plate XIV* we see one of the priests, or artists, dressed to represent the god of death, preparing the paint. The other two figures in the same division show them at their devotions in their cabins. In the lower division they are at work carving the images. The peculiar form of the instrument here figured (see Fig. 35) leads me to believe it was of metal.

In the upper division of Plate XV* are the "messengers," who were sent by the priests to procure the wood, with machetes in hand, chopping down the trees. Although Landa states that cedar alone was used in this work two different species of trees are evidently represented here, the black one doubtless the native ebony out of which their "black" images were carved.

Division two of Plates XV* and XVI*, and division four of XVII* and XVIII*, represent the artists at work carving images, but here the machete is the chief implement used.

The upper division of XVII* contains two groups of figures which I find it difficult to interpret satisfactorily. I think these are symbolic representations, and not pictographs. The left group may possibly signify that out of the earth (represented by the head in the lower left-hand corner) springs the tree (denoted by the curved beam with Cauac characters upon it); that it finally produces a god (the figure at the top) to which the people and priests offer incense and viands. If this be the true interpretation it is a severe satire upon their worship, and reminds us strongly of the sarcasm of the prophet Isaiah on the religion of the idolaters of his day.

The group to the right is possibly a figurative representation of a similar idea. At the base are two Tlaloc heads, emblems of fertility, out of which arises a tree in the form of a cross, on which is seated an idol. The plant probably signifies the "tree of life," or "life-giving plant."

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Similar crosses found in other Codices, with two indicated halves, denote the meeting of two periods of time—that is, the close of one period and the commencement of another; but it is doubtful whether any such idea is connected with this one. I think it has reference to the newly-formed god, as we see the priest here also presenting offerings. The character at the foot of the priest, according to what we have heretofore ascertained, denotes bread. In the third division we probably see the newly-made images in baskets, covered with cloth, as stated by Landa, whose description of this work will be found in Appendix No. 3, I.

The persons represented in the upper division of Plate XVIII* are piercing their ears and sprinkling the blood on tortillas, or on the sacred stones *Acantun.*

In the upper division of Plate XIX*, and running over upon the right margin of XX*, and in the second division of the former, we have, as I believe, a series of figures relating to one subject. The earnest desire of the Maya woman for posterity is a fact well known; it is also well known that to this end it was their custom to beseech the aid of their deities with earnest prayers. In this series of figures we see, I think, this custom represented and its result. Commencing at the right of XIX* and moving toward the left, there is, first, the woman pleading with one deity, who turns his back upon her—that is, refuses to grant her prayer; the next one listens, but gives no favorable response; the third is more favorable; and now the first (shown again in the fourth figure) and the second (shown again on Plate XX*) are disposed to be gracious.

In the second division is shown the result. Proceeding from the right towards the left we observe the tightening girdle; next, one strand broken and then the other. The figures on which they are sitting are probably intended for mats.

Although this series may have a general application it is possible that it refers also to incidents in the life history of some goddess, or noted female of the early days of the nation.

The figures in the third division of XVIII* and XIX* may have some relation to the series first referred to; but, if so, I have not succeeded in finding it out.

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The lower divisions of XIX* and XX* are occupied with figures of women bearing burdens. The substance borne by three out of the eight is denoted by Kan figures, which, as I have heretofore intimated, represent maize. The two burdens indicated by death symbols possibly denote the bones or ashes of their dead; I think it likely some of them denotes calabashes, gourds, or some vegetable of this kind.

This "death symbol," as I have called it, may also be used as the symbol of some such vegetable product, especially as there are one or two Maya words of similar sound that signify calabash, gourd, &c. The right-hand figure of XX* is carrying something which probably denotes squashes, and the two at the right of XIX* their lares and penates.

The figures in the third division of Plate XX* (see Fig. 86) form the sequel to the first and second of XIX*, but we are not to understand this as representing baptism,[1] as the sprinkling is not performed by a priest, nor is there a priest present; but rather as ordinary ablutions

The two figures in the left compartment, upper division of XXI*, are undoubtedly time symbols. The triangular Ezanab character in front of the Chac probably denotes the close of a luster or Cycle, as this is the last of the intercalated days of the Ix years. The circles on the curved figure may signify years of Ahaues.

The females in the lower divisions of XXI* and XXII* appear from their hair to be young unmarried persons, who are probably praying unto the gods, represented by the idols before them, to give them husbands, or to grant some special favor.

The upper division of Plates XXIII*–XXVIII* appear to relate to warfare. On Plate XXVII* we see the victors returning, leading their prisoners and captured animals, singing and dancing as they move along. By the wayside is one of the slain enemies being devoured by a vulture. Here the priest is seen also with his captive, but, as might be expected, it is a woman.

On XXVI* and XXV* we see the prisoners delivered into the hands of the priests to be sacrificed. Holding by the hair, as here shown, appears

[1] As to the Maya baptism, see the quotation from Landa's Relacion and Translation, Appendix No. 5.

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always to indicate that the individual is to be sacrificed. Repeated examples may be found in the Mexican Codices.

On the former there is also the figure of a bird plucking the eye out of one of the slain; but here, as I think, something more is intended than simply that a vulture is devouring a dead man. The peculiar eye and black body show very clearly that this is the same bird as that on the right in the upper division of Plate XXVIII*. In the latter we see the figures of two birds in deadly conflict. What is the meaning of this picture? I believe it is a kind of pictograph, somewhat similar to those drawn by modern Indians, and that it signifies a battle between two tribes, represented by these two birds. The bird with the red circle around the eye denotes that tribe to which the author of the Manuscript belonged, and which, as a matter of course, was victorious. This is shown by the figure on Plate XXVI* previously referred to. As further evidence of this we see the other bird a captive in the hands of the individual at the right hand of the upper division of Plate XXIII*.

On Plate XXIV* we observe the god of the conquered tribe a captive in the hands of the deity of the victors, and in front of them a soldier running away with captured spoils, and the priest with the captured woman. On Plate XXIII* is the figure of a Chac firing the dwellings of the conquered village. The last-mentioned figure is the one Brasseur interpreted as signifying the craters of a double volcano.

The reader is not to understand that I claim that the order in which these figures are mentioned is that in which they should come, nor is it claimed that they denote here a real battle, as it is probable they represent only a kind of play enacted during some festival; yet there is doubtless an allusion to some real battle or war. My principal reason for believing it represents only a play is the significant absence of weapons.

The following account of the celebration of a Pipil victory is taken from *Bancroft's Native Races:*

"When information was received from their war chief that he had gained a victory, the diviner ascertained to which of the gods sacrifice was to be made. If to Quetzalcoatl, the ceremony lasted fifteen days, and upon each day they sacrificed a prisoner. These sacrifices were made as follows:

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All those who had been in the battle returned home in procession, singing and dancing, bringing with them the captives who were to be sacrificed, their wrists and ankles decorated with feathers and chalchiuites and their necks with strings of cacao-nibs. The high-priests and other ministers went out at the head of the populace to meet them with music and dancing, and the caciques and captains delivered over those who were to be sacrificed to the high-priests. Then they all went together to the court-yard of their *tuepa* or temple, where they continued dancing day and night during the time the sacrifices lasted. In the middle of the court was a stone bench on which the victim was stretched, four priests holding him by the feet and hands. The sacrificing priest then came forward, adorned with many feathers and loaded with little bells, holding in his hand a flint knife, with which he opened the breast of his victim, tore out the heart, brandished it toward the cardinal points, and finally threw it into the air with sufficient force to cause it to fall directly in the middle of the court, saying, 'Receive, O God, this thank-offering for the victory.' This sacrifice was public and beheld by all the people."

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CHAPTER V.

SYMBOLS, PICTOGRAPHS, AND OTHER FIGURES WHICH CANNOT BE PROPERLY CLASSED AS WRITTEN CHARACTERS.

Before attempting to explain any of the written characters I will notice some other figures which are true pictures, but were not specially alluded to when speaking of the figures in the spaces; others which may be classed as pictographs, and some which appear to be true symbols.

Foot-prints.—These appear to have two or three different significations in the various manuscripts.

First. A journey made, denoting not the road, but the fact that some one has passed on in a given direction, that a journey has been partly or completely accomplished. This use is common in some of the Mexican Codices.

Second. That so many periods of time have elapsed. This appears to be their signification on Plates 34 to 38 of the Borgian Codex and Plates 25 to 28 of the Dresden Codex.

Third. To denote movements to be made during certain religious festivals. This appears to be one object of their use in the Manuscript Troano, as, for example, on Plates III and VI. Another is to indicate journeyings.

The machete or hatchet (*bat* in Maya) is represented in the Manuscript in two forms (Fig. 18, *a* and *b*). As it is not likely the artist intended to be strictly accurate in minor details, his only desire being to represent the implement with sufficient exactness to insure its recognition, we may not be warranted in assuming that these two forms indicate a difference in the hatchets. The one marked *a* may be the conventional figure, and *b* an

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attempt at true pictorial representation; yet I suggest as possible that the latter, which was used in carving the wooden images, may represent the copper ax and the other the stone ax. Landa (Relacion §XXIX) says: "They had little hatchets of a particular metal of this form [Fig. 18*c*]. These they adjusted to a handle of wood; in combat these served them as an arm; they were also *instruments used in working wood.*"

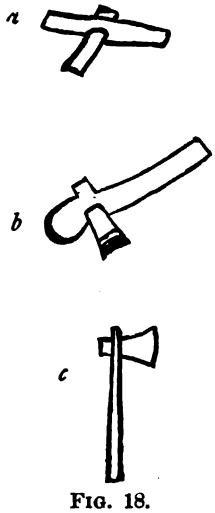

FIG. 18.

The *spear* or *dart*, and one method of throwing it, is shown in Fig. 13 (page 96), heretofore referred to. I judge from this that a kind of hook or hand ballista was used to give it more force. Something similar is shown frequently in the Mexican Codices and, according to Valentini, on the Berlin stone. The instrument in the other hand may be a stick with a notch in it to guide the dart; the only reason for doubting this is the bent form given the one figured on the next plate.

The usual form of the spear as given in the Manuscript is shown in Fig. 19*a*. This often has the head marked with the trembling cross similar to that in Ezanab, probably denoting that it was made of flint.

The arrow, if such it be (as no bow is found in the Manuscript), is generally figured with the head in this form (Fig. 19*b*), indicating, if truly represented, that a flint was thrust into the split end of the shaft in the usual way; the other end of the shaft was surrounded by two feather whirls. Possibly these are darts thrown by hand and not arrows.

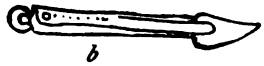

FIG. 19.

I have been somewhat surprised to find nothing in this work indicating warfare, unless it be the figures which I have heretofore interpreted as probably representing a play. Herrera, speaking of the expedition of Cordova (Dec. 2, Bk. 1, chap. 3), says that, while at Cotoche, "there appeared a multitude [of Indians] in armor made of quilted cotton, with targets, wooden swords having edges of flints, large cutlasses, spears, and slings

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* * * * pouring in at the same time such a shower of stones and arrows that they wounded fifteen Spaniards."

Bernal Diaz, from whom Herrera evidently quotes, says: "These warriors were armed with thick coats of cotton, and carried besides their bows and arrows, lances, shields, and slings."[1]

Landa (Relacion §XXIX) says their offensive weapons were bows and arrows, which they bore in a quiver, the latter made of reeds and having the points armed with obsidian or fish-teeth, and very sharp. "They had little hatchets of a particular metal," heretofore referred to, "which, in combat, served them as an arm." "They also had lances a tois [fathom] in length, armed at the end with a silex head, very hard. And they had no other arms."

Figures in red, like that shown in Fig. 20 (the little squares only are alluded to), are found in a number of places in the Manuscript. Brasseur interprets them as symbols for *cab*, "honey" or "honey-comb." The connection in which they are found I think proves that he is correct. We find elsewhere, as in the character for Cauac, and on articles made of wood, a similar figure, usually smaller, outlined in black, but never colored. Attention will be called to this hereafter.

FIG. 20.

A figure like that shown in Fig. 21 is also found on several plates

FIG. 21.

FIG. 22.

FIG. 23.

FIG. 24.

of the Manuscript, but never in the Codex. Sometimes it is in the hands of a priest, but in a few instances it seems to be used as a character or symbol. Brasseur's interpretation is *nen* or "mirror"; but this I think is a mistake. It is more probable that it is a figure of the *calendar wheel* mentioned by Landa.

Mortars used for preparing paints are represented in two forms (see Figs. 22 and 23): their *paint-pots* as in Fig. 24.

On Plate XXXIV we observe the priests in the act of painting blue that which is here shown (Fig. 25), which is probably a little adoratorio

[1] Hist.—Keating's Transl. p. 4.

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baldachin or place in which their idols were seated in their temples. Something similar is also found elsewhere in the same work.

Houses, cabins, and other buildings, even temples in which their idols were placed, appear usually to be represented in the Manuscript by such figures as shown in cuts 26, 27, 28, and 29.

Fig. 26.

These, as will be seen by comparison, are really but slight variations from theMexican conventional symbol for a house (*calli*).

The side wall in Fig. 29 appears to be composed of blocks of some kind placed one upon another, probably of stone, each bearing the *Muluc* character. *Mol*, the root from which most of the words commencing with *mol* and *mul* are derived, signifies "a group of things united or congregated one upon another," but without reference to the material of which they are composed. It is true that in this house we see the figure of a bee, and might therefore suppose it represents the place where the hives were kept, but the officiating priest in front leads us to believe it denotes a temple of some kind in which the ceremonies of the apiarists' festival were performed. The character at the top of the wall with a cross in it, somewhat resembling that in the symbol for *Ezanab*, is very common in these figures. This probably marks the end of the beam which was placed on the wall to support the roof. I so conclude because I find that it is wanting in the lighter and temporary dwellings, represented in Fig. 28. The interpretation of the character as here used is doubtful. The curved line running from this to the top portion probably represents the rafter; the slender

Fig. 25.

Fig. 27.

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thread-like lines (yellow in the original) the straw or grass with which the roof was thatched.

The checkered part may represent a matting of reeds or brushwood, on which the straw was placed.

The following extract from Landa will give an idea of the form and structure of the ordinary dwellings of the people as seen by him:

"HABITATIONS OF THE MAYAS.

"The manner of building the houses in Yucatan was to cover them with straw, which they had in abundance and of good quality, or with leaves of the palm trees, well suited to this purpose. Thy raised the roof, giving it a considerable pitch, in such a manner that the rain could not penetrate it. A wall was then erected in the center, dividing the house lengthwise, leaving in this wall some doors for communicating with the part which was called the back of the house, where they had their beds; the other part was carefully whitewashed with lime. In the houses of the nobles these walls were covered with pleasant pictures. It was in this part that they received and lodged their guests.

FIG. 28.

FIG. 29.

"This side had no doors, but was open the whole length of the house, the roof descending very low, in order that it might be a shelter from the sun and rain. It is also said that this was to render himself master of the enemy inside[1] in time of necessity.

"The common people built at their expense the houses of the nobles, and as they had no doors it was regarded as a grave fault to make the least error in the houses of others.

"They had formerly at the back a small door for the use of the common people.

[1]The passage is very difficult and the rendering doubtful.

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"For sleeping-places they had bedsteads made in a trellis of canes, covered with mats, and on these they stretched themselves covered with their clothes of cotton. During the summer they usually slept on the front extended on their mats, principally the men."[1]

What is shown in Fig. 26 possibly represents a small wooden adoratorio, niche, or canopied seat, in which we see an idol. I judge the side wall to be wooden by its form and by the characters on it. That these characters are used to signify wood, and possibly a particular species, I think is evident from the following facts: Running through the Manuscript we first observe them in this figure on what we may justly assume to be an upright wooden beam. We see the crosses or ×× on what are evidently the ends of beams in the upper division of Plate IX; and in another figure (Plate XXII*), intended to represent the same thing, we see on the ends of the beams both the squares and crosses. They are also on a tree in the right of the upper division of Plate XV*.

In the last-mentioned figure we notice that the tree is severed by a machete or hatchet in the hands of a priest representing the god of death. In the upper divisions of Plates XIII and XIV the same character is on the benches upon which the personages are seated. The blocks, boxes, hives, or whatever they may be, in the first division of Plate IX*, and the blocks in the hands of the individuals figured in the middle division of Plate XXII* are marked with the same character.

The widely different forms and the diversity of uses to which the things bearing this character are applied make it evident that if the character refers at all to the thing on which it is placed, it must be to the substance. As it is found, in some cases, on figures that we know must represent trees, the necessary conclusion is that it denotes wood. Whether it is meant as a general term, or applies to a particular species, is a question I am unable to answer with certainty.

I will call attention to the character itself and its probable interpretation a little further on.

The houses shown in Plate XVI* (see Fig. 28) are probably the temporary cabins mentioned by Landa in which the artists manufactured their

[1] Landa's *Relacion*, pp. 110 and 111; see Appendix No. 4, where the original is given.

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wooden idols. We observe that the character with the cross is wanting, and hence presume that the walls were too slender to bear the weight of a beam. They were probably built of slender poles or of canes, as was common in Guatemala, and covered perhaps with palm-leaves.

Instead of the figures at the top always being marked in the peculiar manner which I have supposed to indicate matting, it is sometimes marked with bent lines, similar to those on the figures representing cords or ropes.

On some of the plates, as, for example, XIII* and XIV*, the figure of a bent tree appears to be used to denote a dwelling of some kind, possibly only a temporary booth. It is true figures of this kind are given in a number of other places for a very different purpose, as on Plates VIII to XIII, where they are used to represent the method of capturing deer; but a little examination will show a marked difference between the two kinds.

If I am correct in reference to the houses, then it is probable the Manuscript relates to a section of country where the dwellings and the temples were of a primitive character.

But few houses or dwellings are represented in the Dresden Codex. In the lower division of Plate 8 there are figures of two, one of which is copied in our Fig. 30. These may represent temples placed on pyramids or elevated platforms ascending by steps, as indicated in the figure.

FIG. 30.

The different forms of their vases are given in our Plates I–IV (Ms. XX–XXIII).

FIG. 31.

The leg of a deer, to which allusion has already been made, is shown by the yellow figure with a double, white band and black tips in the upper left-hand corner of the lower division of Plate I (Ms. XX).

The machine or apparatus used for, and the method of making, ropes or cords, is represented on Plate XI* and in our Figs. 31 and 32. The first (Fig. 31) shows the method of preparing the material. Strips of the substance used, probably the inner bark of some tree, or aloe fiber, is placed on a bench of the form shown, which has pieces extending upward from

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the sides, so as to retain the strips in position. A kind of hand hackle is then used, as shown in Fig. 31, to slit them to the proper fineness. After some process not given, we next find the material rolled into a ball. The next process, that of twisting into the rope or cord, is represented in Fig. 32. A few feet having been twisted by hand, the end is fastened to a little tree or stump, the ball of material is placed in a vessel or on a stool, while by means of a spatula-shaped instrument, doubtless of wood, the twisting is carried on. It is probable the implement is used simply to turn the ball, while the person at work gradually moves backward.

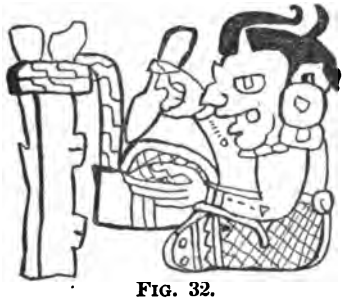

FIG. 32.

FIG. 33.

The idols, while in the process of manufacture, are usually represented by the heads only; those not yet painted or ornamented, without any other lines than those necessary to show the parts or organs, as in Fig. 33, which shows also the method of carving (see Plate XV*); those which are painted or ornamented (Fig. 34). One of the implements used by them in carving their wooden images, I judge from its form, as shown in Fig. 35, was metallic.

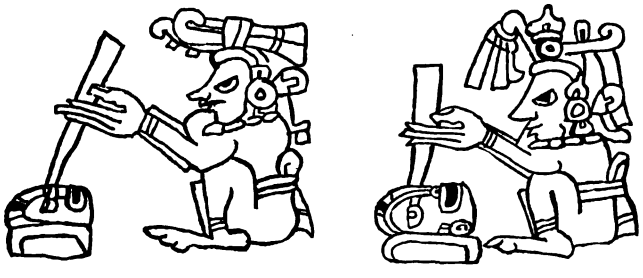

FIG. 34.

Cloth is usually indicated by cross-hatching, as shown in the dresses of the females on Plates XVIII*, XIX*, and XX*; rain and falling water by slender, usually waved blue lines, as on Plates XXIV–XXVII. In the third division of Plate XX* the lines are blue, but not waved. Blood is shown by slender, waved red lines, as in the upper division of Plates XXII and XVIII*.

A utensil or implement is represented on Plates XXI* and XXII* by a figure similar to our Fig. 36, the lower end always black, as shown in the figure. It was held by the middle or circular portion, the fingers of the

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hand being thrust through the hole. I am unable even to surmise its use. In four instances it stands behind a priest, who is in a squatting posture and appears to be holding bread or maize in his hand and performing some religious ceremony. In two instances it is in the hand of a priest clothed in black, and in a similar posture, who holds it in front of him. In all cases it extends as high as the top of the head, and the curved ends turn from the person.

FIG. 35.

FIG. 36.

A very singular implement (Fig. 37) is figured in the third division of Plate XXIII*. It appears from the figures in the plate to have been held, while in use, in the right hand, which grasped the hoop at *a*. Its use can only be guessed by the connection in which it is found. In each case it is held up beside a tree, which appears to have been severed at the point immediately opposite, the top not yet fallen down. On the severed end of one we see the supposed death symbol. From these facts I infer that it was used as a kind of saw, though it is possible it was employed in peeling the bark from the trees used in the manufacture of their wooden idols. If used as a saw, which I think most likely, the teeth were probably flint chips, fastened to the hoop by strings or thongs. A fact worthy of notice is that the figure immediately following (or preceding) these in the third division of Plate XXIV* shows the use of the machete in felling trees, but here the evident intention is to represent a much larger tree, as shown by the diameter and three branches, a tree also of a different species.

FIG. 37.

An implement of the form shown in Fig. 38 is represented in the middle division of Plate XXXI*. As this appears from the figure in the plate to be used by the individual in whose hands it is held to sever the cord which he also grasps, I presume it is a cutting instrument, probably of flint. The personage represented by the right-hand figure in this division is the god of death, and the death symbol is in the same compartment; therefore it is presumable that the

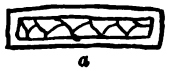

FIG. 38.

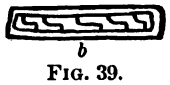

FIG. 39.

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whole is intended as a symbolic representation of death cutting the thread of human life.

On Plate XIX*, and elsewhere, the figures on which the individuals are seated are marked as shown in our Fig. 39^a. According to Brasseur's interpretation these signify "mats." In this I think he is undoubtedly correct. He asserts that Fig. 39^b also denotes a mat, but this I think doubtful, as I find it on cords, or ropes, and on the roofs of houses; possibly in the latter case it may represent a kind of matting.

FIG. 40.

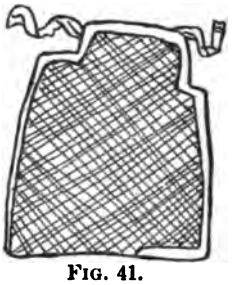

FIG. 41.

Prisoners are usually represented here, as in the Mexican Codices, with their long hair in the grasp of their captors or executioners.

Fig. 40, found on Plate XXV*, probably shows the form either of the bat used in playing ball or of a fan. Fig. 41, copied from Plate XX*, undoubtedly represents one of their bird-cages, as in it, in the original, there is a captive bird. The opening appears to have been at the bottom. To the top were attached cords, by which to carry it.

FIG. 42.

FIG. 43.

Fig. 42, found on Plate XXXII*, and elsewhere, I think represents a block of wood to be used in the manufacture of an idol or some temple implement.

FIG. 45.

Fig. 43, found frequently in the Manuscript, is doubtless the leaf of the mimosa or some similar plant. Fig. 44—see Plate XXIX*—may possibly represent a kind of tapestry or curtain hung over the doors or openings of the interior rooms of the temples. The interlacing and the square notches at the bottom show that it is some kind of cloth.

FIG. 44.

FIG. 46.

Fig. 45, found so frequently on the heads of individuals, I think, as heretofore intimated, is a time symbol

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signifying the "tying of the years," and hence a period, as a luster, or Katun, or possibly the joining of two years.

The conic figure (Fig. 46), always found in the mouth of an individual, I take to be a cigar (*chamal*). On Plate XXVI* it is represented with the larger end black at the tip, and red behind this for a short distance, which, together with the dotted lines representing smoke, show that it is on fire.[1]

[1] The figure is not exactly correct, as it shows a narrow ring at the end of the cigar, white, with a broader black ring behind it. The white ring should be *black* and the black ring simply shaded to represent the red portion.

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CHAPTER VI.

THE WRITTEN CHARACTERS OF THE MANUSCRIPT.

It is not my intention at present to enter into a general discussion of the ancient Maya writings, as this will be found in the introduction by Dr. Brinton. On the contrary, I shall confine myself as strictly as possible to an examination of the characters found in this, occasional reference to the Dresden Codex and the inscriptions on the ruins being made only for comparison and illustration.

The interpretation of these written characters is, as a matter of course, the chief, though not the only object of our research and examination. Although my progress in this direction has been limited, yet I trust the result will show that I have made some positive advance.

In discussing these characters there are some preliminary questions to be considered, which, if satisfactorily answered, may aid us in the attempt to decipher them:

First. The direction in which they are to be read.

Second. The order in which the parts of the compound characters are to be taken.

Third. Whether they are, in any sense, phonetic.

THE DIRECTION IN WHICH THEY ARE TO BE READ.

Brasseur de Bourbourg, influenced by the direction in which the figures appear to be moving and in which the faces are turned, which, in nearly all cases, is toward the left, concludes that the writing must be read by lines from right to left, and by columns from the bottom upward. His attempt at deciphering was made upon this theory, which I believe he subsequently confessed to be an error, although still retaining his theory in reference to a great geological cataclysm.

Mr. Bolloert[1] followed the same method, reading from the bottom upwards and from right to left.

[1] Exam. of Cent. Am. Hier., p. 306.

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Dr. Brinton[1] suggested reading by columns, first down, then up, commencing with the right-hand column.

Rosny believes the characters should be read from left to right.

Wilson believed the inscriptions were to be read in columns from top to bottom, and the manuscripts from left to right.

Mr. Holden appears to have arrived at the conclusion, by his method of examination, that the inscriptions are to be read from left to right.

It is probable that no conclusion on this point will be entirely satisfactory until the characters are interpreted; still I think we can find means of determining it with reasonable, if not absolute, certainty without waiting for them to be deciphered.

The large character at the upper left-hand corner of the Palenque tablet we may safely assume is there used much in the same way as we use capital letters, and hence that the inscription is to be read either in columns, from the top downwards, or in lines, from left to right.

But we find more direct evidence on the point in the Manuscript itself. I have shown, as I think conclusively, that the day columns, at least, are to be read from the top downwards. The natural inference, therefore, would be that the other characters are to be read in the same way. But there are good reasons for believing that, although the usual method of writing was in columns, horizontal lines were by no means uncommon. Turning to Plate XIV (our Fig. 16) we find, in the middle and lower divisions, a series of columns composed of the same characters, except the ones at the top and at the bottom. Three of these columns may be represented by letters, thus:

m.	*p.*	*n.*
b	b	b
c	c	c
d	d	d
7	12	9
f	h	g

[1] Ancient Phonet. Alphabet of Yucatan, p. 6.

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It is hardly possible that this should be read in lines, as in this case entire lines would consist of a single character repeated. If we suppose these groups to be ritualistic formulas, as they probably are, and to be read in columns, the change in the first and last characters would be consistent with this idea.

Turning to the lower division of Plate XV, shown in Fig. 47, we find

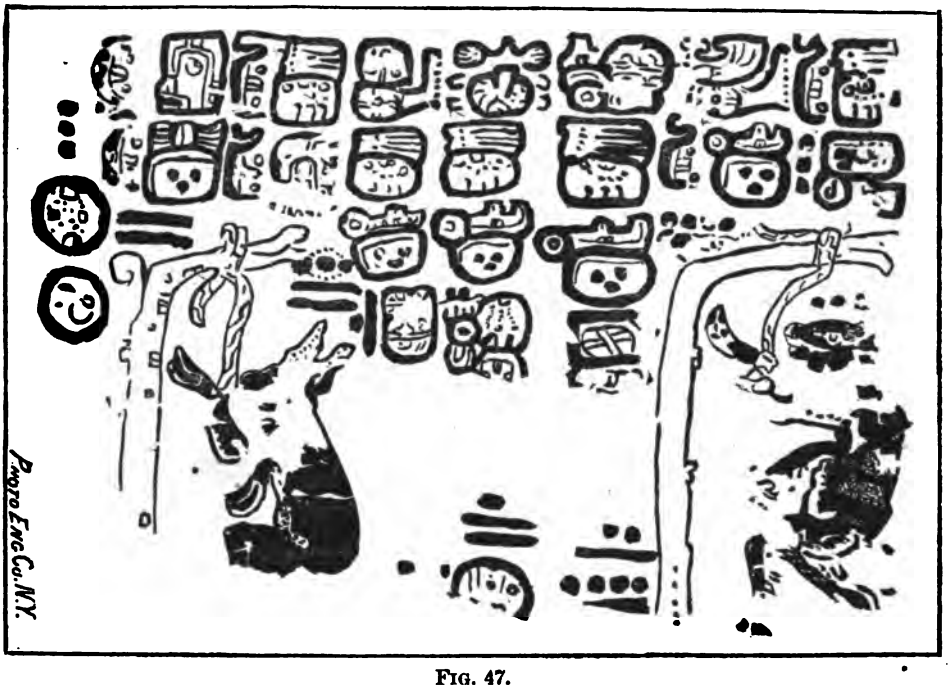

FIG. 47.

the characters arranged as here represented. Here are two short columns on the right and two on the left (day column not counted), evidently shortened to allow space for the figures of deer which are inserted there.

Using letters to illustrate, repeating those that represent similar characters, and placing as in the plate, we have this arrangement. In order to

b *a*	*h*	*l*	*m*	*w* *a*
r *n*	*a*	*a*	*a*	*r* *s*
	r	*r*	*r*	
	p	*k*	*i*	

make my meaning clear I have used real words: First, *barn;* second, *harp;*

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third, *lark;* fourth, *mart;* fifth, *wars; a* corresponding with the character 1, and *r* with the character 2.

1. 2.

In the middle and lower divisions of Plate XIX we have also examples of this method of changing columns into lines. As I will have occasion to refer to this plate for

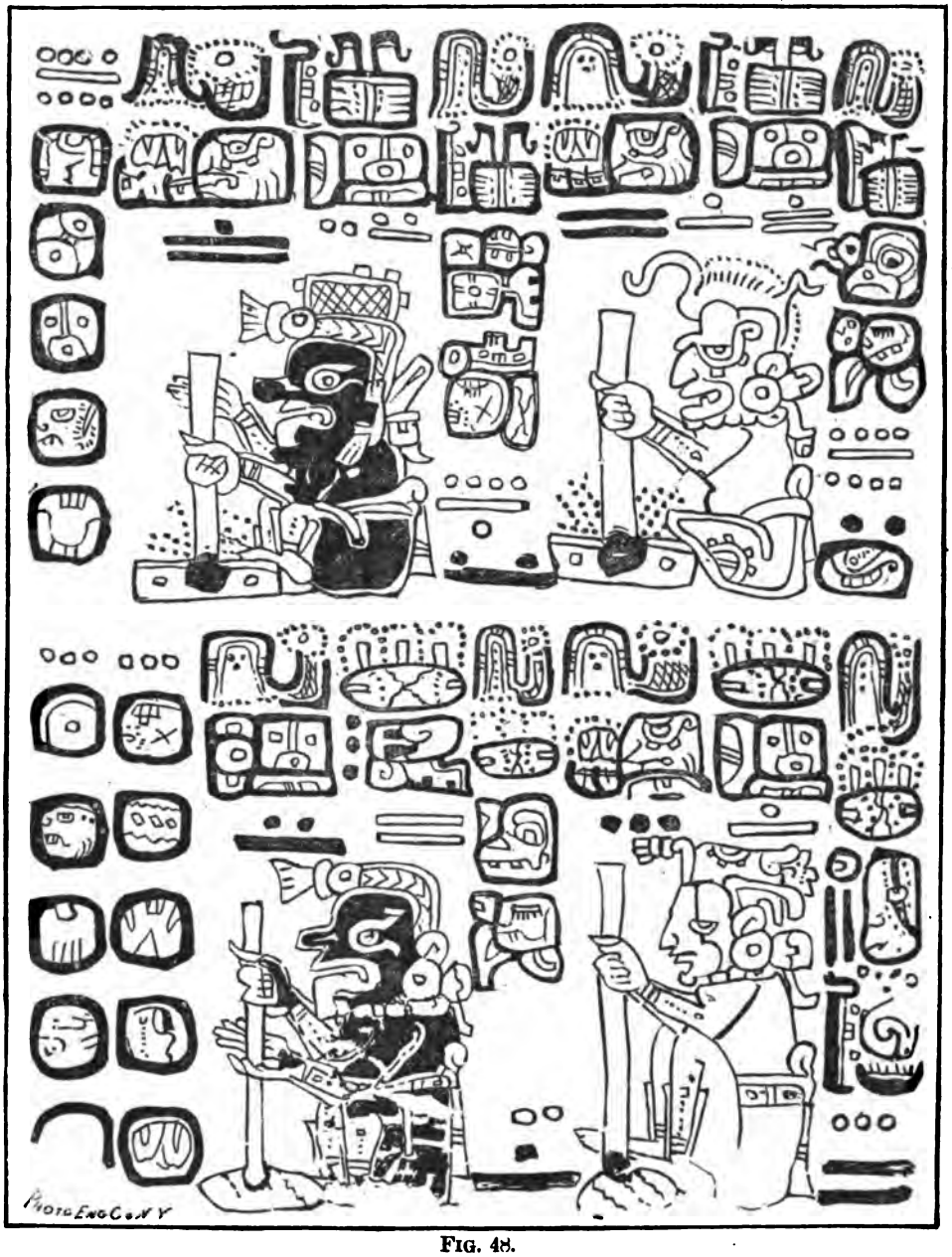

FIG. 48.

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other purposes the two divisions are copied entire in Fig. 48. In each division (not counting the day columns) there are four groups, each of four compound characters, the first and second being alike. If we represent them by letters, and arrange the letters in the same order as the characters,

h a	*h*	*h a*	*h*
r k	*a*	*r k*	*a*
	n		*l*
	d		*t*

they would stand thus in the middle division (the upper one in our figure). We see by this that the first and third columns being shortened are changed into two lines, just as the first and last in Fig. 47, so that what followed downwards in the column follow from left to right in the lines. Plates VI*, XI*, XV*, and some others furnish similar examples.

Although we cannot claim that this furnishes *absolute* proof of the direction in which these lines and columns are to be read, yet it will probably satisfy any reasonable mind that the columns are to be read from the top downwards, following each other from left to right, and that the lines are to be read from left to right, following each other from the top downwards; also that the usual method is in columns.

THE ORDER IN WHICH THE PARTS OF COMPOUND CHARACTERS ARE TO BE TAKEN.

This and the other question, "Are these characters in any sense phonetic?" are so intimately connected that I will not attempt to discuss them separately.

The day and numeral characters have already been given, and so often referred to that by this time the reader must be familiar with them. The characters for the months, as found in Landa's work, have also been given, and it only remains for us, therefore, to present Landa's hieroglyphics of the Maya letters (Fig. 49) in order that the reader may have before him the entire key with which we have to work in our attempt to decipher the Maya manuscripts.

A comparison of the three groups of characters (days, months, and

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letters), using the significations given by Landa, will suffice to convince any one that it is impossible to form the day from the letter characters, even allowing the widest latitude in the representation of sounds.

Take, for example, the character for *Muluc*, as compared with those for *m* and *l*; *Ahau*, as compared with those for *a*, *h*, and *u*; *Kan*, as compared with *k* and *n*; *Chicchan*, as compared with *c*, *h*, and *n*; *Ezanab*, as compared with *e*, *z*, *n*, and *b*, &c.

But it does not necessarily follow from this that Landa was wholly mistaken. The days may have retained their characters as symbols from more ancient times, before any approach to phonetic elements had been made, and hence might not present any of these elements.

FIG. 49.—Landa's Maya Alphabet.

As we find some of these day symbols on the Palenque Tablet, which is probably much older than the Manuscript, we have some foundation for this supposition. Another ground for this supposition is that we have good reason for believing that some at least of these characters are used in the Manuscript and Codex as denoting something quite different from the days they represent, or that which the name of the day signifies.

Notwithstanding this, there are some of the day and month characters in which we can detect, beyond doubt, some of the letter elements, showing them to be to a certain degree at least phonetic. For example, the character for *Cauac* differs but slightly from that for *cu* (qu?); *Chuen* and *Tzec*

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contain the main elements of *c*; *Cimi* (Kimi) those of *k*; in *Pop* or *Poop* (Poob) we see the character for *b*; in *Zac*, both *z* and *cu*; in *Cumhu*, *cu* and some elements of *m*; in *Kayeb*, *k*; &c.

Comparing the days and months with each other, we can occasionally detect similar elements where there are similar sounds. In both *Chicchan* and *Pax* we see the interlacing, or cross-hatching, and in both the sound *ch*; in *Manik* and *Men* the three parallel strokes, possibly *m* or *n*; we also observe similar strokes in *Ymix*.

After we have carried this comparison to its utmost extent the number of cases where we find such resemblances in form where there is a similarity in sound are so few, compared with those in which we do not, that we are forced to abandon, at least to a great extent, the attempt to decipher the writings of the Manuscript by the use of these letter characters upon the theory that they are phonetic. I say "to a great extent," because, as we have seen, there is some evidence that phonetic elements were introduced to a limited degree.

I may be permitted to remark in this connection that in all the attempts to decipher these documents which have thus far been made, one very essential part of Landa's statement has been too lightly passed over, and not sufficiently considered. Speaking of the Maya writing, he says: "The people made use of certain *characters* or letters with which they wrote down in their books their ancient affairs and their sciences, and by means of these and by *certain figures*, and by *particular signs in these figures*, they understood their affairs, made others understand them, and taught them."[1]

It is evident, as I think, from this language that Landa does not wish to convey the idea that the native writing had reached such a degree of perfection that by means of phonetic characters alone—or, in other words, writing in the true sense—they could record historical facts and communicate with each other. And his attempt to give the characters for their letter sounds is, to a certain extent, a contradiction of his own statement. He has undertaken to pick out of their compound or syllabic characters the letter

[1] "Usavan tambien esta gente de ciertos carateres o letras con las quales escrivian en sus libros sus cosas antiguas, y sus sciencias, y con ellas, y figuras, y algunas señales en las figuras entendian sus cosas, y las davan a entender y enseñavan. Landa, *Relacion de Cosas*, p. 316.

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elements; hence it is, that while we find it impossible to decipher the manuscripts by using them, yet we find such frequent resemblances as to compel us to admit a fundamental relationship. This theory I think is borne out by his attempt at explaining their method of spelling, which does not correspond with anything to be found either in the Troano Manuscript or the Dresden Codex, nor with his previous statement, which I have quoted. Moreover, his own language, taken in connection with his alphabet, implies that the natives with whom he was consulting found it impossible to recombine the elements he had picked out so as to form words.

This I believe to be the true explanation of his letter characters and the only one that will enable us to understand why it is impossible to read the manuscripts by means of them, and yet finding them so often agreeing with the characters we meet with in these works.

The day-characters we know he found in their books, as we see abundant evidence of this in those yet in existence.

Although the month-characters appear to be wanting in the Troano Manuscript they are to be found repeatedly in the Dresden Codex, not always in the form given by Landa, yet substantially the same, and accompanied by numerals or other particulars by which we can readily determine them. We have, then, as our only positive guide to start with, in our attempts at deciphering the written characters of the Maya manuscripts, the day and month symbols, and with no assurance that these are phonetic.

If there are any phonetic elements in this writing they must be discovered with but little reliance on Landa's letter characters.

As it is extremely doubtful whether the day and month characters in all cases correspond with the modern names applied to them, we must bring every other possible test to bear in determining the meaning and corresponding word. We have also to proceed upon the assumption that the language of the Manuscript is the same as that found in the Maya lexicons which have been given to the world, when it is possible that it is in a dialect of the Maya varying from that in the lexicons.

As the safest basis on which to found my arguments, I select a few characters, the meaning of which, I think, can be ascertained with satisfactory certainty without having to decide whether they are phonetic or not.

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This character (Fig. 50) has already been referred to as occurring on Plates XX–XXIII of the Manuscript and 25–28 of the Codex, and as being used to denote the "stone heap" on which the Uayeb idols were placed. The reasons given for this belief I think warrant me in assuming it to be correct. Referring to the Lexicon we find that *piz* signifies "a stone serving to form the divisions in a Katun or cycle"; *ppic*, "stones placed one upon another, serving to count the intervals in a cycle"; *ppiz*, "a stone on a fishing line," and *tun*, stone in a general sense. As the connection in which it is found relates to the end and commencement of periods of time, I take for granted that if it represents a word it is either the first (*piz*) or second (*ppic*).

FIG. 50.

This combination (Fig. 51) found on the back of the spotted dog in Plate XXI, appears from Landa's statement, as already shown, to represent "bread of maize." The usual form of the combination, which is found very often, is given in Fig. 52, but the order in which the characters are placed is frequently the reverse of that given in the figure.

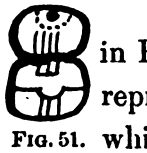
FIG. 51.

FIG. 52.

I think I have presented good reasons for believing that the characters shown in Fig. 53 are used to denote "east" and "west." The one marked *a* I have concluded denotes East—in Maya *likin* or *lakin;* the one marked *b*, West—*chikin.* Whether this conclusion be correct or not, I think there can be no doubt that one denotes one of these cardinal points, and the other the other cardinal point. This being admitted, we are not left in doubt as to the signification of the lower part of these compound characters, as it must be the hieroglyph for *kin*, "sun" or "day."

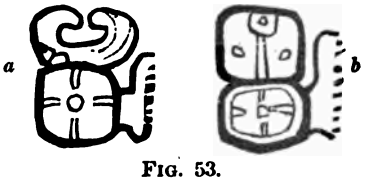

FIG. 53.

FIG. 55.

FIG. 54.

The characters for the other cardinal points—north and south—are given in Fig. 54. As there is yet some doubt as to their assignment I pass them for the present, allowing the conclusion heretofore reached in reference to them to stand.

The character shown in Fig. 55, when placed on a figure, denotes,

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sometimes at least, *che*, "wood" in a general sense, or some particular kind of wood.

As the character shown in Fig. 56 is placed on spear-heads, evidently for the purpose of indicating the substance of which they are composed, or the character of the substance, it must signify "silex," or hardness, as contrasted with the wood or material of which the shaft was composed. Whether *Ezanab* was the Maya word denoted, is not certain.

FIG. 56.

FIG. 57.

Fig. 57 is found but once in the Manuscript—in the upper division of Plate IX. As it is above the figure of an armadillo, I presume it is the symbol used to denote that animal, and hence that it is not phonetic.

Fig. 58 is on the neck of most of the vases figured in the work. Although very common in the written portion as a prefix or suffix to other characters—as shown in Fig. 59, where it is probably used as a pronoun or article—when found on these vessels I take for granted that it is the hieroglyph for *u*, the Maya word for "vase," as also for "month" and certain pronouns.

FIG. 58.

FIG. 59.

Using these, together with the day and month characters as a key, I will proceed to discuss the nature of the written characters, in order to decide, if possible, whether they are phonetic, and, if so, to what extent. That some of them are but symbols, as, for example, that shown in Fig. 57, cannot be doubted. It is also quite probable, as will appear in the course of our discussion, that a few are simple pictographs.

As the one shown in Fig. 50 is, in one form or another, of frequent occurrence in both works, let us compare these on the supposition that they are in some degree phonetic, and see what the result will be.

Comparing with Landa's character for the month Pax (Fig. 60), we observe here the two broad perpendicular bars, but in addition thereto three little rings, or ovals, at the bottom, and a cross-hatched appendage at the left. The bars, it is true, are not solid here, but, as will be presently seen, this difference does not appear to indicate a difference in the signification.

FIG. 60.

FIG. 61.

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On Plate 70 of the Codex the character shown in Fig. 61 occurs, accompanied, as here indicated, by the numeral character for "thirteen" in black. There is little, if any, room to doubt that this is here used to denote the month Pax. As it bears no resemblance to any of the day characters, the accompanying numerals would certainly lead us to believe it denoted one of the months, and, if so, the one named. Another reason for this belief is that on the same plate—in fact, in the next line—are the characters for Cumhu and Yaxkin, each accompanied by numerals. But in this case, that for the former (Cumhu) is given thus: , and that for Yaxkin thus: , omitting the appendage added by Landa. Turning to Plate 69 of the same work, we observe what appears to be the same character in the form shown in Fig. 62. Another similar figure on the same plate has the little upper circle cross-hatched, but this is unaccompanied by numerals, though there is another by the side of it as in Fig. 63. In the same column we can detect without doubt the characters for the months Yaxkin, Poop, and Mac.

FIG. 62.

FIG. 63.

On Plates VII*, IX*, and XIX* of the Manuscript, what appears to be the same symbol occurs in the form shown in Fig. 64, with the numeral character for five annexed in two cases (Plates VII* and IX*). In one instance four bars are distinctly shown, but in the one on Plate IX* the bar to the right is solid; the one on Plate VII* is as represented in Fig. 64, proving, as I think, that this difference has no material significance. Can this be used here as the symbol of the month? If so, it is the only month symbol I have been able to detect in the Manuscript. The inference is therefore strongly against this assumption. The first two (Plates VII* and IX*) occur in that part of the Manuscript which, according to my interpretation, relates to the festival of the Bee-keepers, and in the middle division, along the lower margin of which we see what are evidently intended to denote offerings. Among them in one place immediately below the character there are two groups, one of three and the other of two red Kans in vases; in another place the leg of a deer. We also find the figure of a deer's leg in immediate connection with our character on Plate VII*. The Maya name for a tortilla

FIG. 64.

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of maize is *pecuah* (according to Perez), or *ppecuah* (according to Brasseur). May we not, therefore, with strong probability of being correct, interpret this character as above given—"five tortillas of maize"—supposing it to refer to an offering? If so, then we have three characters, denoting the three words *ppec* or *pec*, *Pax*, and *pecuah* or *ppecuah*, in which the double bars occur, which doubtless represent the labial element *p*, or *pp*, if they are phonetic. It is worthy of notice, in this connection, that *pacach*, according to Perez, also signifies "a tortilla of maize," and *pakach*, "to make tortillas of maize." It is probable, therefore, that *pecuah*, when spoken, terminated with the sound of *ch*.

Turning to Plate XXXI, first and second divisions, where the method of planting maize is indicated, we find this character (Fig. 65) forming a part of the head-dress worn. As I have already suggested, this is probably the hieroglyph for the Maya *ppoc*, "hat" or "head-covering."

FIG. 65.

FIG. 66.

Assuming that I am correct in these interpretations, we have then the characters for four words—*ppec* or *pec*, *Pax*, *pecuah* or *ppecuah*, and *ppoc*—in which the two perpendicular bars occur, which, in all probability, represent the labial element *p* or *pp*, if they are phonetic. The typical form of the whole character probably represents the syllable *p'c* or *p'ch*.

Fig. 66 represents the interlaced or cross-hatched character.

The character for Chicchan, as given by Landa, is represented in Fig. 67. In the Manuscript it is most frequently of the form shown in Fig. 68. These, as will be seen, consist of two parts, the checkered portion and the loops or blocks, and the word of two principal phonetic elements, *ch* and *n*.

FIG. 67.

FIG. 68.

Referring again to the symbol for *Pax* (or *Pash*, as the Maya *x* has the sound of *sh*, or *ch*, in machine), we see that the checkered portion is at the *left*, while in that for Chicchan it is at the *right*. As *ch* is the only phonetic element common to both words, and the cross-hatching the only portion common to both figures, we may assume as probable that this character represents the hissing, or *ch*, sound of the two words. Turning now to the Maya lexicon, we find that *chichan* signifies "little," "slender," "thin," &c.; *tzi*, which has a slightly harder hissing sound, signifies "anything that is

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very little, slender, thin, or slim"; *tzil*, "divided, separated, torn, rent," &c.; *tzulche*, "trellis, lattice-work, barred," &c.; *tzic*, "to part, cut, divide," &c.; *tzack*, "to cut fine, to hash," &c; *dzil*, "to work mosaic, to weave, plait," &c.; all of which are words that have the hissing sound as their chief phonetic element.

On Plates II, III, VI, and elsewhere we see the figure of the red-mouthed god, which we can scarcely doubt is *Chicchac-chob*. On the head-dress in the three plates designated is this same interlaced figure.

On Plate XXV, lower division, is the figure of a serpent with rattles, to which allusion has heretofore been made, which is marked with checkered or cross-hatched spots; *tzabcan*, in Maya, signifies "a serpent with rattles"; see also the serpent in the lower division of Plate V. We also see that the apron, and appendage hanging between the limbs, is marked in the same way, possibly denoting, as heretofore suggested, *zihil*, "birth," as the design appears to be to symbolize the birth of the storm-cloud.

I suggest as possible that the characters in the hand of the left figure, upper division, Plate XXX*, one of which is the reticulated figure, the other that of Cauac, may denote *cauche*, the cultivated cocoanut. One reason for this supposition is that the figure in the other hand (Fig. 69) appears to be the hieroglyphic for *omal*, "bread," especially a certain kind of flat tortilla, used in sacrificial offerings.

Fig. 69.

Fig. 70.

In the middle and lower divisions of Plate XIX we find the character shown in Fig. 70, occurring several times.

The figures in the spaces appear to be grinding paint in stone and earthenware mortars. The pestle is straight, rather slender, and cylindrical in form, and is grasped by both hands. I venture the suggestion that the circle of dots with the little oval in the center, indicates that the pestle is to be turned or whirled round, and the changed direction of the curves denotes to the right and left, or first one way and then the other. The cross-hatching indicates a word with the sound of *ch*, *tz*, or *z*. As tending to confirm this suggestion, we find, by reference to the Maya lexicon, that *dzic* and *dzical* (adjectives) signify "left," and *dziical*, "left hand." (See Fig. 48, p. 139.)

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Referring to Plate XXIII*, we find in the middle compartment of the upper division the figure and characters represented in Fig. 71.

The lower line of the inscription over the figure consists of three characters, which I interpret as follows:

Chehzic u cahal: "Consumes (or destroys) his (or the) dwelling."

FIG. 71.

The eye and snout in the left-hand character, translated "consumes," I presume imply that this is done by the Chac. The parts of this compound character are taken in the same order as the others heretofore interpreted; that is, from right to left; those of the third, translated "*dwelling*," from below upwards.

It is possible that the left-hand character should be rendered *zatzic*, which has the same signification as *chehzic*, and also has the two hissing sounds, indicated by the interlaced portion.

If I am correct in my rendering of the right-hand character, it will probably enable us to determine this one (Fig. 72), which is often used in the Manuscript. I suggest *okoltba*, "prayer," and, with the numeral, "three prayers." But it is possible that the true rendering is *ocol* which, according to Perez, signifies, when joined to a number, the course or order, as of priesthood.

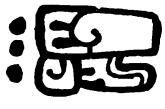

FIG. 72.

Adopting these suggestions, we would translate the characters in the upper right-hand corner of the middle division, Plate VII*, Fig. 73, thus:

FIG. 73.

a.	*b.*	*c.*	*d.*
5 *ppecuah*	*okoltba*	*hau*	(?)

"Five tortillas of maize, three prayers, the leg of a deer, ?", or, "Five tortillas of maize, the third priest (or priest of the third order?), the leg of a deer." I prefer the first rendering, as the character marked *b* frequently occurs without the numeral where the second interpretation would not apply.

Fig. 74, which is precisely like that for Caban as usually given in the Manuscript, is found on several plates and also frequently in the

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Codex; sometimes on the bench or form on which persons are seated or lying—see Plates XXXII, XXXIII, XXV*, XXXIV*, &c.; on the blocks or square figures on Plates II* to X* which relate to the festival of the apiarists; on the foundation or substance out of which plants and vines arise, as on Plates XXXII and XXXIII; and as a character into which the machete or hatchet is thrust (Plate XXIV*). In the Codex it is found on the wall and base of what appears to be a kind of house, or a niche in a temple (Plates 20 and 67); on seats or benches, and in one instance on something laid on a pyramidal altar, on which a human head is placed, having the "dead eye," as though representing the act of cremation. It is evident that no one substance can be indicated in all these places.

FIG. 74.

On the plates relating to the bee-keepers' festival, where it is figured thus (Fig. 75), as on Plate VIII*, the block or vessel is red, or marked with a red border, is suspended by cords, and a bee is placed across it. Here it is probable that it should be interpreted *cab*, "honey," or *cabnal*, "bee-hive." But this explanation will not answer in one out of a hundred of the other places where it is used.

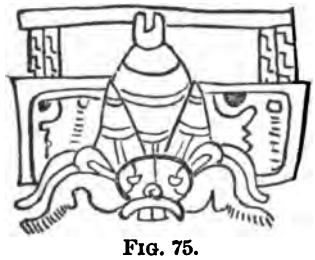
FIG. 75.

Where it marks the substance out of which plants arise, as on Plates XXXII and XXXIII, it is probably used to signify the earth or soil. We find by reference to the lexicons that *cab* has also as one of its significations "earth" or "soil," and that *cabal* signifies "at the foot," "at the foundation," "at or on the ground," &c. This will furnish explanation of all those cases where "earth," "ground," or "soil" is applicable, or where it is on that out of which plants grow and on which persons are seated or lying. In the lower division of Plate XXXII are the figures of four seats or forms similar in outline to that shown at *a*, Fig. 74,; two are marked with the character interpreted *ppec*, or "stone," and two with the character represented at *a*, Fig. 74. If two are stone, as we have good reason for believing, the others must be wood or earth. The fact that persons are represented lying down at full length

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upon this character furnishes a strong reason for believing it should in such cases be rendered "earth."

Turning to Plate XXIV*, we observe, in the third division, the figure of a large brown tree, and a person standing by with hatchet in hand in the act of cutting; in the inscription immediately above is Fig. 76. There can be little, if any, doubt that this refers to cutting into the tree. The Caban character may signify a particular species, but I think it more than probable the word denoted is *cabal*, "at the foot or base," "at the ground"; and that the proper rendering is "cut with a hatchet at the base," or "at the ground." The cut or opening at the base of the brown tree appears to correspond with this interpretation, especially as the tree to the right in the same division is severed at a short distance above the base.

FIG. 76.

If my rendering of this character, in the different uses to which it is applied, be correct, it must be to some extent at least phonetic.

On the wall and base of the dwelling, or whatsoever it may be, on Plate (30) of the Codex, it is probably used to denote that it is earthen, or plastered.

This character is closely allied to the symbol for the day *Cib* (Kib), which is usually given thus in the Manuscript (Fig. 77). In each of the words we have the sound of *k* and *b*, but one of the characters has a line of dots that is wanting in the other. The inner line and the little cross-marks usually found in *Cib* in the Manuscript, and represented in Fig. 77, do not appear to be essential.

FIG. 77.

The character represented in Fig. 78 occurs in the middle division of Plate V.

FIG. 78.

As the figures in the spaces probably represent traveling merchants, it is possible that this should be rendered *u beom*—the "traveler" or "merchant."

The third division of Plate XXIX (the lower of the two shown in Fig. 79), is divided into four compartments, each with its figure and superscription, the latter consisting of four compound characters in each

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case. Commencing with the upper extreme left-hand character, let us

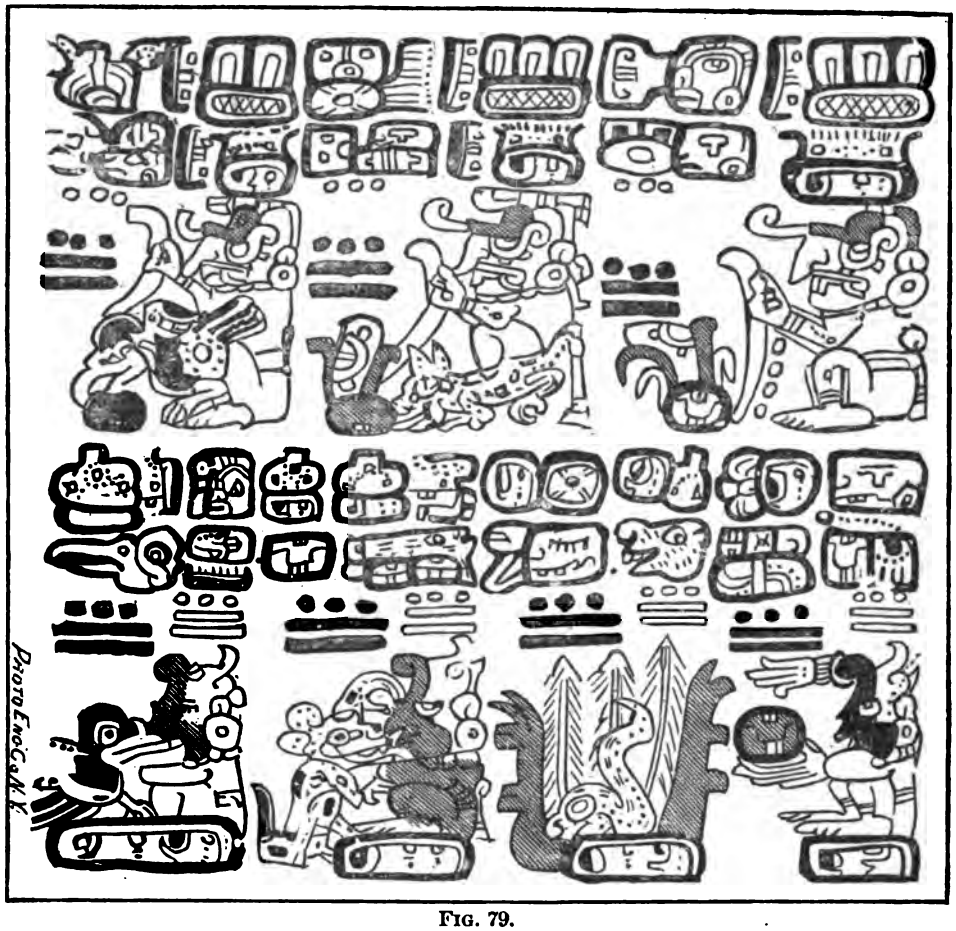

FIG. 79.

complete it (as the lower part—the loop—appears to be imperfect) thus:

. This will make the whole character the same as the third and fourth to the right in the same line. The order in which they are to be taken I presume is as follows: First, the upper line over one figure, from left to right, then the next line below in the same order; next, the group over the next figure in the same way; and so on, counting the groups from left to right.

We observe that the lower left-hand character of the first or left-hand group is the head of a bird, and also that a bird is in the figure below; that the lower right-hand compound character also contains a distorted head,

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somewhat human in appearance, but which may be intended to denote the quadruped in the figure below; that the lower right-hand character of the third group, although showing teeth, may be intended as the symbol of the worm-like figure beneath.

In view of these facts, and also of the additional facts that the right-hand group contains no animal head, nor is there below the figure of any animal, I am inclined to believe that these three heads are but symbols of the animals below them. We also observe that the figures are placed on *Caban* characters, and that each group of the superscription contains a *Caban* character, all doubtless having reference here to the earth or soil. If the figures with the two-colored face denote growing maize, as the attacks of the bird and quadruped indicate, we then have strong reasons for believing that the characters refer to the figures beneath them. I may also add here, what is stated elsewhere, that as a rule animals, persons, and deities, or at least idols, appear to be generally represented among the characters by the head; hence such characters cannot be phonetic.

A study of the two groups similarly arranged on the right of the lower division of Plate III* satisfies me that they relate to the method of dealing with a swelling on the hand, caused probably by the sting of a bee or some other insect, or the bite of a serpent (observe the serpent's head on the figure below). We see here the figure of a hand in two places, and on each a protuberance or swelling distinctly marked (Fig. 80.) By the side of each is Fig. 81, which is probably the hieroglyph for the Maya words *u-mo*, "a swelling of the flesh," or "tumor." The next character in order is the one shown in Fig. 82, which may be interpreted *u-cab-poc*, "bathe or wash it with honey."

FIG. 80.

FIG. 81.

FIG. 82.

The character in the hand of the figure immediately under the inscription appears to agree with this interpretation (see Fig. 83): *Cab-men* (*min* or *mon*). *Min* signifies that which diminishes or causes to grow less; *mon*, the same; and *moncab* (same as *momcab*), a cooling or soothing

FIG. 83.

FIG. 84.

FIG. 85.

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wash.[1] The hand here figured I take to be simply a pictorial representation.

The characters in the right-hand compartment of the middle division of the same plate, I think probably relate to the offerings of honey and tortillas for the dead.

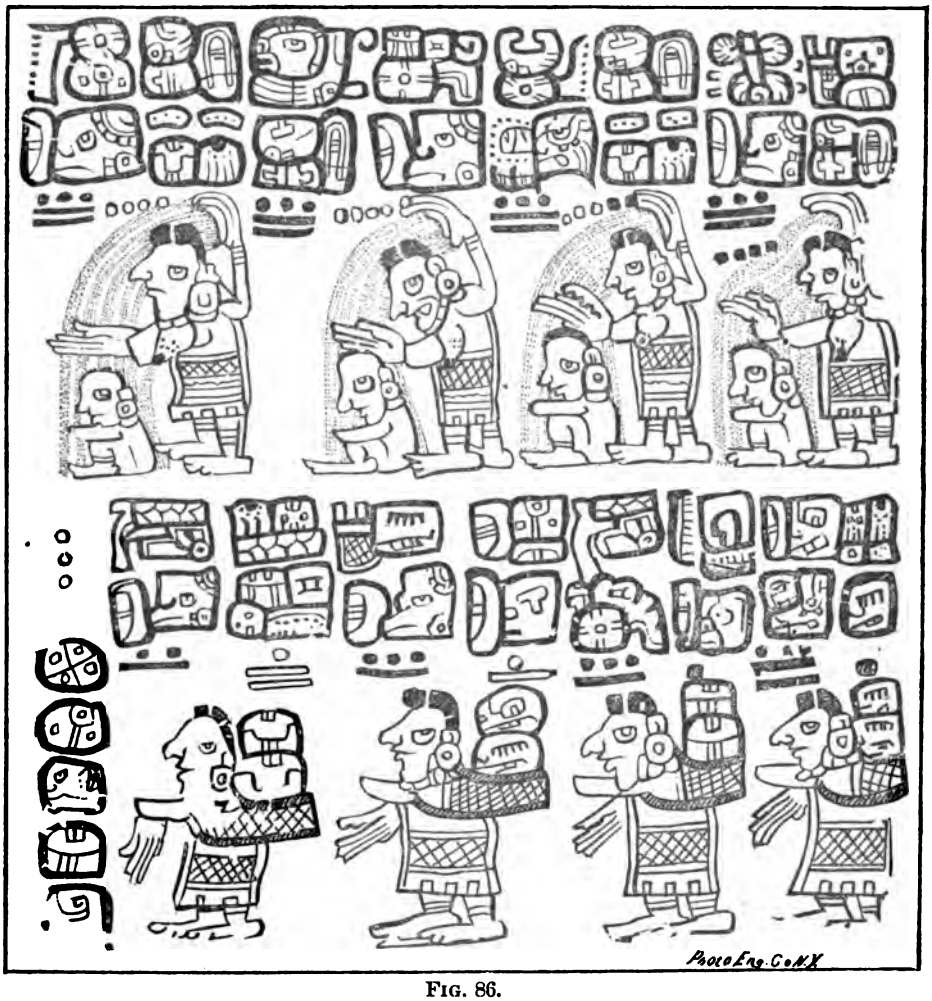

FIG. 86.

The character represented in Fig. 84, found so frequently on Plates I* to X* and elsewhere, may denote pieces of honey-comb, or a kind of drink made of honey, as Brasseur says (note in Landa's Relacion), "honey that has passed into the state of hydromel, which was their ordinary wine."

[1] I follow, in most cases, the interpretation given by Brasseur in his Maya lexicon, and make no attempt to give oblique forms, as my knowledge of the Maya language is too limited for this.

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As heretofore stated, I have concluded that Fig. 85 signifies *likin*, "east," "eastward," "at or toward the east"; literally "the rising sun." If this is correct, then, as before intimated, the lower character with the alar appendage must represent the latter syllable *kin*, "sun" or "day"; and the upper, the first, *li*, derived from *likil*, "to arise," "to be lifted up or elevated."

Turning to Plate XX* we see in the third division the figures of four females, each apparently engaged in sprinkling water on a child in front of her (Fig. 86). Above them are two rows of characters, apparently grouped by fours (counting each compound character as one), two of the upper and two of the lower line to each female figure. In the first group to the left is the character I have heretofore interpreted as signifying west; immediately to the right of it, in the same group, is this character (Fig. 87). In the second group is the character heretofore interpreted as signifying north, but with an arm-like appendage; immediately below it, in the same group, is the character shown in Fig. 87; the third group has the character for east and this also; and the fourth or last group to the right the same character (Fig. 87), and that heretofore interpreted as denoting south.

FIG. 87.

As we find the same character in Fig. 87 as in Fig. 85, we may assume it stands for the same sound, *li*, and accepting Brasseur's interpretation of the lower left-hand character as signifying *ha* or *haa*, "water," and the added character to the right as Landa's *i*, we have *li-ha-i* or *lila-i*, "to sprinkle the child with water," *lila* meaning "to sprinkle with water," and *i* child. As *lil* signifies "to shake," "to toss," &c., a better rendering may be *haa-lil i*, "the water shake (or dash) on the child."

Commencing with the left-hand group and taking the four characters in the order heretofore adopted, the upper two from left to right and then the lower two in the same way, and taking the groups from left to right, I obtain the following result:

First group: "Toward the west; sprinkle water on the child; (———?); tortillas."

Second group: "Toward the north; (———?); sprinkle water on the child; (———?)."

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Third group: "Toward the east; sprinkle water on the child; (———?); tortillas."

Fourth group: "Toward the south, (*ichintzah*) give a bath; (———?); sprinkling water on the child."

This character (Fig. 88), found in the first, second, and fourth groups, I am unable to interpret. The larger right-hand portion may be a variant of *chicchan*, and the whole stand for the words *a* or *u chichan*, "a little," or *ha-chen*, "water from the senote or well"

Fig. 88.

Fig. 89.

The third character in the third group (Fig. 89) is also one I have been unable to interpret. The smaller figures to the left may possibly denote the words *ca-chuc*, "a cuff" or "blow." The peculiar eye in the right portion I think refers to some particular deity.

I am aware that this interpretation of these groups hangs on a very slender thread which, if broken, lets the whole thing fall to the ground, and hence have given it with a feeling of considerable doubt. But the four similar figures and the symbols of the cardinal points agree very well with this conclusion.

As I have already intimated, there are good reasons for believing that the compound character shown in Fig. 90 denotes "bread of maize" or "corn bread." As will be seen, this consists of the characters for *Imix* (or *Ymix*) and *Kan;* as *ixim* signifies "maize," we may assume, without great liability of being in error, that this is the equivalent of *Imix*.

Fig. 90.

Fig. 91.

But I am inclined to believe the latter symbol (that for Kan) is used not only to denote bread (tortillas), but that in the pictorial portion it is also frequently given to represent corn (maize).

The combination shown in Fig. 91, and found so frequently on the plates of the Manuscript and Codex, probably denotes "cakes" or "two cakes," or "tortillas of maize." The two are found combined as in Fig. 90 and with the accompanying characters on Plate III*.

Turning to Plates VIII* and IX* of the Manuscript, we notice along the lower border of the middle division what are evidently offerings; some are pictorial representations and some perhaps symbols; among these we

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see vessels of different kinds, on which are Kan symbols of a reddish or orange color. As heretofore stated, we find over one of the groups (left side of Plate IX*), a character accompanied by the numeral five, which I have supposed denotes the Maya word *ppecuah*, *pecuah*, or *pacach*, "a tortilla of maize." That these symbols could have no legitimate signification, if interpreted by any of the meanings of Kan found in the lexicon, is apparent to any one. The fact that they are in vessels—in one case a vase with the usual vase mark, in another a kind of platter, &c.—indicates that they are offerings that can be appropriately presented in vessels of this kind.

In the lower division of Plate XXI we observe a bird in the act of eating one of these Kan characters. Although this is probably a symbolic representation relating to time, still the figure itself is intended as a representation of that which is used as the symbol—a bird eating something, doubtless corn or bread.

On Plate XXVIII, second and fourth divisions, we notice, as I have previously stated, the figure of a deity, which probably signifies the earth, looking up in a supplicating manner, bearing in his hands, or in the hands of the little figures he holds, Kan symbols. As there is good reason for believing these are symbolic representations of the parched earth pleading for rain, it is more than probable that the Kan characters here denote corn or maize. This supposition is rendered almost certain by the fact that the one in the right hand of the lower figure presents a little opening blade or leaf, showing that it has been planted and is sprouting; in the other hand is the bread symbol.

The two combined, or the *Kan* singly, are of frequent occurrence in the hands of the priests in the Manuscript, where apparently engaged in religious ceremonies. The *kans* in the baskets carried by females (lower divisions of Plates XIX* and XX*) I have already alluded to; there can be scarcely any doubt that here they signify corn or bread, more likely the former. I think it quite likely that here, and where not in the written portion, these figures have more the character of pictographs than hieroglyphics, as they are both tolerably fair representations of a grain of maize.

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Fig. 92, copied from the upper division of Plate IX, is, I think, beyond doubt the symbol for the armadillo figured in the same division. There are characters somewhat closely resembling it found in other parts of the Manuscript, but none of them have the posterior border of scale-marks, and at the same time the peculiar eye that is used throughout the Manuscript to mark quadrupeds.

FIG. 92.

Fig. 93, which has for its only characteristic the same figure as Landa's *ca*, is found frequently in the Manuscript, so placed as to lead me to believe it represents some fruit or vegetable product that is useful as food, or in some other way in domestic life, and that was also considered an appropriate offering to the gods.

FIG. 93.

For example, we see it carried in baskets by women—lower division of Plates XIX* and XX*; in the hand of the bird figure—middle division, Plate II; in the hands of the priest, apparently as an offering, on a number of plates; on the back of figures representing persons traveling—Plate V; marked on (as though denoting something in) a vase—lower division, same plate; in the symbol of the day *Cimi;* and also in Landa's character for *k*.

I presume from these facts that, if phonetic, the word or syllable it represents has as its chief phonetic element the sound of *k*. As the Maya word *ca* signifies a species of squash or calabash used for food in Yucatan, I presume this is what it denotes in these pictorial representations, especially as this interpretation does not appear to be inconsistent with its use in any of them. But that it also has other significations is evident from the fact that it is found in *Cimi*, and also as an eye-mark. The same idea is doubtless embraced in both, that is, "death," and the chief phonetic element *k*.

In close relation to this, and which should be considered with it, is the character represented in Fig. 94. Brasseur has taken it throughout as one form of the Cimi symbol; but there are some reasons for believing there is, at least, a slight difference in the signification of the two, as on Plates XIX* and XX*, in the basket of the woman at the left, we see both characters. As the other burdens are represented by the duplication of one character, the bringing of these two together here shows their close relationship to each other. It is also worthy of notice

FIG. 94.

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that the relative position of the two is exactly the reverse on one plate from what it is on the other.

As the burdens of two of these females evidently consist of their household gods, it is possible that those of the two just alluded to may consist of the bones of their dead. If so, Fig. 94 may represent the skull and the Cimi symbol the other bones. In the inscription above the head of the left-hand female, lower division Plate XX*, we find this character (Fig. 95), which, according to the explanation of the parts so far as given, should probably be interpreted (reading from right to left) *cimen-ich*, "the dead children." In this interpretation the right-hand character is given its usual signification; the reticulated portion, *ch;* and the two lines running upward from this, *i.* Still it is possible that this explanation is very wide of the mark, as these characters may represent certain fruits or other articles of food, perhaps different kinds of calabashes.

Fig. 95.

The character represented in Fig. 96 is very closely related to, if not a variant of, the Cimi symbol. It is found very frequently throughout the Manuscript in the spaces containing the figures or pictorial representations. As in a large proportion of these cases the figures have some reference to death, the gods of death, or of the lower regions, and as the character appears to be a variant of Cimi, I have designated it the "death symbol."

Fig. 96.

It is found in connection with the supposed god of death in the following places: Lower division of XXXV (when joined with XXXIV); lower division of II*; upper division of VIII*; second and lower divisions of XI*; second division of XXII*; middle division of XXIX*, of XXX*, XXXI*, and XXXIV*. It is also found equally often with the god and goddess with this eye: . It is also found with the god that has the dark stripe across the face, as in the lower division of Plate III. Hence I am inclined to believe that this and the other two are to be classed with the deities of the underworld. We also find this character in several places where the idea of death or destruction is evidently intended to be conveyed. For example, in the upper division of Plates VII and XXV; second and third

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divisions of Plate XXXII; third division of XXXIII; upper division of VIII*, XX*, and XXIX*.

The next group I refer to is found in the upper division of Plate X, and consists of one perpendicular column and two transverse lines, as shown in Fig. 97. Taking the column at the left, proceeding from the top down-

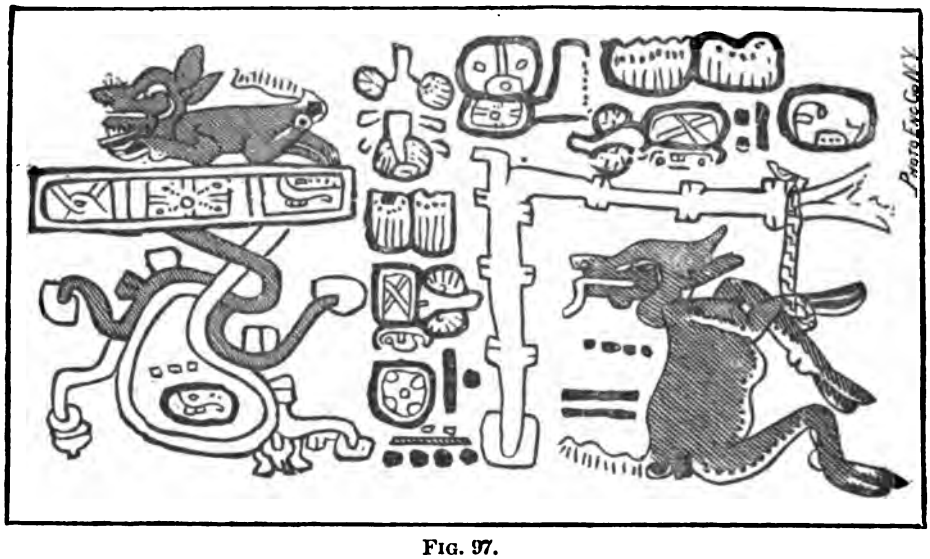

FIG. 97.

wards, I suggest the following interpretation of the four compound characers :

"South, tortilla of maize, vase, or pan, of burnt clay, turn 6 (times)."

The characters here interpreted *yam* and *xam*, I am aware, are apparently identical; but the former, which is a part of that heretofore interpreted "south," is one in reference to which I have been, and still am, in great doubt, especially as it may well be interpreted *xamin*, "north." The two *Imix* characters here translated *ixim* are doubtless used more as symbols than as word characters. The vase, or *u* character, is, I think, simply added to render definite that to which it is attached. The lowest character (Landa's *b*) may be *heb*, "to turn over" or "revolve"; *eb*, "to elevate"; *be*, "to march"; or *pe*, also "to march."

The transverse lines reading from left to right, I would interpret thus: "West, tortilla of maize, pan of burnt clay, 7 (times), deer?."

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A free translation of the column would then be about as follows:

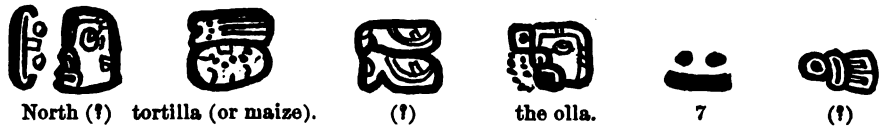
"Facing the south, place the tortilla of maize on the pan of burnt clay and turn it six times (or elevate it, or march with it six times)."

The meaning of the transverse lines is similar, except as to direction, until we reach the last character, which I have reason to believe refers to the deer. But it also contains another element, represented by the circle at the lower margin inclosing little dots, probably the equivalent of the *b*-character of the column.

The line and column in the upper division of Plate XI appear to be of similar import, but varied in the cardinal points and in one of the characters. I am not prepared to attempt an interpretation of this group, but am inclined to believe, from the presence of the *ik* symbol, that it refers to exorcising the evil spirit.

The groups in the middle and lower divisions of Plate XIV (Fig. 16, p. 99), which are to be taken in columns, and read from the top downwards, are evidently of similar import.

Take, for example, the second (third, if the day column is counted) from the left of the middle division, I would suggest something like the following interpretation (reading from the top downwards):



North (?) tortilla (or maize). (?) the olla. 7 (?)

FIG. 98.

The third compound or double character is possibly a pictograph to represent venison, or deer hams. Brasseur supposes it to be a variant of the Cimi character, but this I think very doubtful.

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CHAPTER VII.

ILLUSTRATIONS OF THE DAY COLUMNS AND NUMBERS IN THE FIRST PART OF THE MANUSCRIPT.

In order that as much of the material contained in this Manuscript as can be given without *fac-simile* representations may be placed before the reader, I will now give the names of the days as found in the day columns of some of the plates; this will enable him to test my interpretation of the numerals. As my object in doing this is to give an opportunity to all into whose hands this paper may fall to test the correctness of the theories I have advanced, I will give the different divisions of the plates, each with its own days and numbers. It is to be understood that where there is more than one division on a plate, as is usually the case, they will be numbered consecutively from the top downward, first, second, third, &c. In giving the numerals, the Roman represent the red or day numerals, the Arabic the black or month numbers. The red numerals usually found over the day columns will also be placed over them here. Those in the spaces will also be given in the spaces here, and by pairs as in the Manuscript. In the first example a few explanatory words will be placed in parentheses; afterwards these will be omitted.

Plates I–XIX all contain three divisions, separated from each other by broad, transverse red or brown lines. It is therefore to be understood, when no special mention is made of the number of the divisions, that there are three on each plate. The upper or top division I will designate as the first, the middle as the second, and the bottom as the third. These divisions are again divided into compartments, usually differing in the color of the ground, which is white, reddish-brown, or blue. In some cases the subject-matter of a division is continued into the second or even the third plate. These do not follow each other in the usual order of pages. Where it

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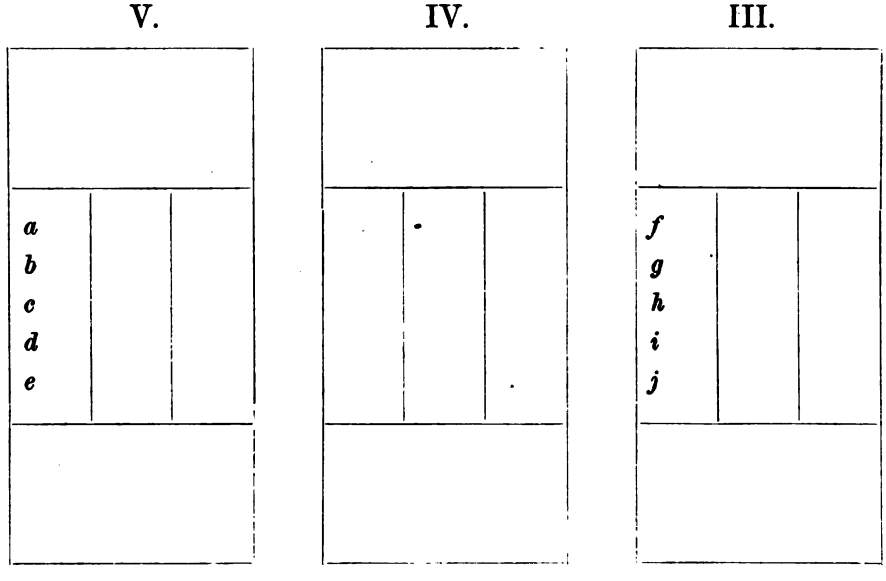
extends over upon the next page or plate, it is always to be understood that the one which precedes is to have its left margin placed to the right margin of that which follows, and that the day column at the left of a division refers to all that stand to the right of it, when thus placed, until another day column is reached. In order to make this clear, let me illustrate by an example. On the middle division of Plate V we find a day column with two figures to the right of it. Turning to Plate IV, we find other figures of a similar character, but no day column. By placing the latter (Plate IV) so that its left margin joins to the right margin of the former (Plate V), we have a continuous series of figures of a similar character. The day column, therefore, on the latter plate, relates to all on the right until we reach the next day column, which will be found in this case on the left margin of Plate III, as in the annexed diagram.



In this illustration the letters represent the days and the position of the day columns. That this is the proper position of these plates in reference to each other may be seen by referring to Plates XXX and XXXI, where the head of the bird in the third division of Plate XXXI—there are four divisions in this case—is on the right margin and the tail on the left margin of Plate XXX.[1]

[1] By binding together the plates, exactly the reverse of Brasseur's paging—as is done in many copies—we will probably have them arranged in the order intended.

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On Plates XXX* and XXIX* the head of the black figure is at the right margin of the upper division of the former, while the body and feet are in the left margin of the upper division of the latter. This explanation will be sufficient to make clear what may hereafter be said in reference to the subject-matter of the division of one plate extending over upon the corresponding division of another.

Plate I.

The day characters on this plate, if there were any, are wholly obliterated.

Plate II.

I give below (Fig. 99) an illustration of the day and numeral characters of the second division of this plate. The black numerals, or those for the month are given here in solid black, the red or day numerals in outline. As the first character in the left column is an unusual one, and the first of the right column is too much obliterated to be determined by inspection, we must ascertain them by means of the intervals.

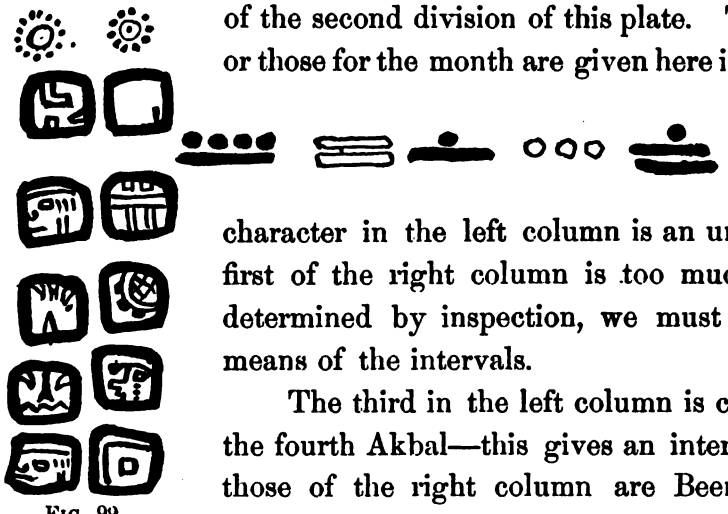

Fig. 99.

The third in the left column is certainly Chuen and the fourth Akbal—this gives an interval of twelve days; those of the right column are Been, Chicchan, Caban, and Muluc, the interval being in each case twelve days. This gives for the left column Manik, Cauac, Chuen, Akbal, and Men. The Cauac character, if such it be, is a very unusual one, being identical with that for Men.[1] The first character in the right column is that for Ymix.

[1] This, I think, is an evident mistake, and furnishes one reason for believing this MS. is a copy.

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PLATE III.

FIRST DIVISION.

Manik.	XI–5.	VI–5.
Cauac.	VI–5.	IX–11.
Chuen.	VIII–5.	IV–3.
Akbal.	X–10.	
Men.		

SECOND DIVISION.

IV.	IV.	
Akbal.	Ben.	I–10.
Muluc.	Cauac.	X– 9.
Men.	Chicchan.	IV– 7.
Ymix.	Chuen.	
Manik	Caban.	

THIRD DIVISION.

Day column obliterated.

PLATE IV.

The first division of this plate is rather an unusual one in regard to the days and numbers. The days are as follows:

FIRST DIVISION.

Ahau.	
Oc.	X–9.
Eb.	(?)–7.
Ik.	
Kan.	
Ix.	
Cib.	
Cimi.	
Lamat.	

We observe that only three of the regular numbers remain; but in addition to these there are small red characters representing the following numbers (?) I,XII, I,XII, I,XII, I,XII, I,XII.

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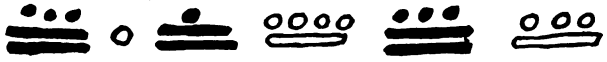
SECOND DIVISION.

The second division commences on Plate V, and includes all of the second division of that plate. The characters are as represented in the annexed cut (Fig. 100):

FIG. 100.



The days are Kan, Cib, Lamat, Ahau, Eb; the dates, 4th day, 13th and 11th months; 1st day, 13th month; 9th day, 11th month; and 8th day, 13th month.

THIRD DIVISION.

XII.

Cauac.	VI–6.
Chuen.	VI–6.
Akbal.	VI–7.
Men.	VI–7.
Manik.	XIII–7.
	XIII–7.

PLATE V.

FIRST DIVISION.

The first division of this plate contains two compartments. The first has the numeral IV over the day column. The days are Caban, Muluc, Ymix, Been Chicchan. The numbers in the space are I–10, X–10.

The second compartment is found partly on Plate V and partly on Plate IV, and is similar to the first division of Plate IV. The days are Cauac, Muluc, Chuen, Ymix, Akbal, Been, Men, Chicchan, Manik. The only regular number unobliterated is the black numeral 13 in the space. The following are the small red numerals: XIII, XI, XIII, XI, XIII (?), XIII, XI, XIII. White cross-bones on a black ground are in this space.

SECOND DIVISION.

The second division of this plate runs over on Plate IV, and has been illustrated and described as belonging to that plate.

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THIRD DIVISION.

The day characters in the third division are wholly obliterated.

PLATE VI.

FIRST DIVISION.

IV(?).	
Ahau.	(?)–10.
Eb.	XI–10.
Kan.	IV–12.
Cib.	(?)–10.
Lamat.	IX–10.

SECOND DIVISION.

XII.	
Caban.	XIII–13.
Ik.	XIII–13.
Manik.	XII–13.
Eb.	XIII–13.
Caban.	XIII–13.

THIRD DIVISION.

IV.	IV.	
Ahau.	Oc.	X–6.
Cimi.	Cib.	I–4.
Eb.	Ik.	
Ezanab.	Lamat.	
Kan.	Ix.	

PLATE VII.

FIRST DIVISION.

The characters and numerals being partially obliterated in the first division of this plate, it is omitted.

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SECOND DIVISION.

XII.	XIII	-13.
I.	I	
Chuen.	XII	-13.
Cib.	I	
Ymix.	XII	-13.
Cimi.	I	
Chuen.	XII	-13.
	I	

This section (second) of Plate VII contains some peculiarities in the day symbols and numeral characters. For example, the day (red) numerals are given thus, , the first signifying two numbers, XIII and I; the second XII and I.

The symbol for Cimi is also peculiar and is in this form . The numbers over the column are XII and I.

THIRD DIVISION.

Day characters on Plate VIII.

PLATE VIII.

FIRST DIVISION.

(?)	(?)		
Kan.	Ix.	XIII- 1.	VI-4.
Oc.	Ahau.	XII-11.	
Cib.	Cimi.	I- 4.	
Ik.	Eb.	X- 4.	
Lamat.	Ezanab.	II- 2.	

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SECOND DIVISION.

VII.	VII.	
Ahau.	Cimi.	XIII– 1.
Eb.	Ezanab.	I– 1.
Kan.	Oc.	XII– 5.
Cib.	Ik.	IV– 3.
Lamat.	Ix.	VII–13.
		VII– 3.

LEFT SECTION OF THIRD DIVISION.

XII.	XII.		
Cimi.	Ahau.	II– 2.	X–10.
Ezanab.	Eb.	VII– 5.	XII–12(?).
Oc.	Kan.	XIII– 3.	
Ik.	Cib.	X–11.	
Ix.	Lamat.	XII– 2(?).	

RIGHT SECTION OF THIRD DIVISION.

I.	
Ahau.	X–10.
Eb.	IX–10.
Kan.	V–10.
Cib.	II–10.
Lamat.	ⓘ–10.
Ahau.	

Part of this section runs over on Plate VII.

The figures in this division, which are all blue, are each seated on a large compound character, under one of the pairs of numerals above given, and pertaining to it as shown by the lines dividing these minor spaces. In the character on which each figure is seated there are, first, an Ahau of the usual size and form, to which is joined a black numeral; then several small Chuen symbols. The numeral over the Ahau belonging to the day numbered I, as given above, is 9; that belonging to the day numbered II is 10; that belonging to the day numbered V is 11.

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The lists of day characters on this plate as given by M. de Charency, differ from the foregoing only in having Ix for the first day of the left column of the upper division, and Kan for the first day of the right column of the same division. These two days are obliterated in the Manuscript and hence have to be restored, which can only be done by counting the intervals.

The interval between the days in these two columns, as may be seen by counting, is six days. This gives Kan as the first of the left-hand column and Ix as the first of the right-hand; hence I conclude that this author is wrong in his restoration, or has made a mistake in transcribing. Following out his plan, we would have an interval of sixteen days between Ix and Oc in the first column and of six between each of the others, and a like discrepancy in the other column. But I think it is evident, from what he says on page 30 of the same work, that he has unintentionally reversed these two days, as it is not sixteen days from Kan to Oc, as he says, but six. If we substitute Ix for Kan and Kan for Ix, we find all his numbers correct, except that it is only ten days from Lamat to Ezanab, instead of sixteen, as he states.

Plate IX.

FIRST DIVISION.

X (?).		
Men.	VII–(?)	The death symbol is found in this space occupying the place of one number of this pair.
Manik.	(I)–(?)	
Cauac.	II–1.	
Chuen.	VI–4.	
Akbal.	XIII–7.	

SECOND DIVISION.

IV.	IV.		
Cimi.	Ahau.	V–1.	VIII–4.
Ezanab.	Eb.	XIII–3.	X–3.
Ik.	Kan.	VII–2.	I–9.
Oc.	Cib.	II–2.	
Ix.	Lamat.	IV–3.	

[1] Déchiffrement des Écritures Calculiformes ou Mayas, p. 26.

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THIRD DIVISION.

X.	X.		
Ezanab.	Lamat.	XII–2.	VII–3.
Kan.	Ix.	X–3.	I–5.
Oc.	Ahau.	IX–2.	VII–(?)
Cib.	Cimi.	II–3.	
Ik	Eb.	III–2.	

PLATE X.

FIRST DIVISION.

There are no day characters in this division.

SECOND DIVISION.

V.	V.	
Oc.	Ahau.	VII–2.
Cib.	Cimi.	V–9.
Ik.	Eb.	IX–2.
Lamat.	Ezanab.	IV–8.
Ix.	Kan.	V–4.

THIRD DIVISION.

VII.	VII.	
Cib.	Cimi.	IX– 2.
Ik.	Eb.	VII–12.
Lamat.	Ezanab.	X– 1.
Ix.	Kan.	XIII– 3.
Ahau.	Oc.	VIII–

PLATE XI.

FIRST DIVISION.

IV.	
Ezanab.	
Oc.	I–10.
Ik.	– 8.
Ix.	
Cimi.	

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SECOND DIVISION.

Ⓘ	Ⓘ		
Oc.	Ahau.	II–1.	XIII–2.
Cib.	Cimi.	Ⓘ–9.	X–5.
Ik.	Eb.	IV–4.	
Lamat.	Ezanab.	IV–2.	
Ix.	Kan.	VI–2.	

THIRD DIVISION.

IV.	IV.		
Oc.	Ahau.	V–1.	IV–2.
Cib.	Cimi.	IV–9.	
Ik.	Eb.	VII–2.	
Lamat.	Ezanab.	IX–4.	
Ix.	Kan.	XIII–6.	

PLATE XII.

FIRST DIVISION.

X.			
Men.	Ⓘ– 5.	II– 6.	
Ahau.	XIII–11.	IX–13.	
Chicchan.	IX– 9.	IX– 8.	
Oc.	XIII– 4.		
Men.	IX– 9.		

SECOND DIVISION.

XII.	XII.		
Ix.	Ahau.	XIII– 1.	IX–2.
Cimi.	Eb.	XII– 2.	XII–3.
Ik.	Kan.	X–11.	
Ezanab.	Cib.	III– 3.	
Oc.	Lamat.	VII– 3.	

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THIRD DIVISION.

I.		
Cimi.	VII– 4.	XIII– 3.
Ezanab.	Ⓘ–17.	X–10
Oc.	IV– 7.	
Ik.	X– 2.	
Ix.	X– 3.	

The lists of days on this plate, as given by Charency, agree with those here given, only in the middle division. Those of the first and third divisions, as given by him, are as follows:

FIRST DIVISION.	THIRD DIVISION.
Men.	Cimi.
Ahau.	Ezanab.
Oc.	Eb.
Men.	Ik.
Men.	Cib.

Some of the characters on this plate are of a form found here only. The character for Oc in both divisions is unusual, an eye being inserted which throws back the broken line as shown in the annexed figure.

The character for Chicchan in the first division is somewhat different from the usual form, as will be seen by the figure here given.

So far as the list in the first division is concerned, there can be no doubt that the first and last characters represent *Men.* This would of itself require an interval of five days between each two, if uniform throughout.

Counting from Men to Ahau, we have an interval of five days; five more gives us Chicchan, five more Oc, and five more Men, as it should be.

Now turning to the third division of this plate, we find that the interval between Cimi and Ezanab is twelve days; twelve more will give Oc. twelve more Ik, and twelve more Ix, which makes the days and the order

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precisely like that of the right-hand column of the middle division of Plate VIII as given by both Charency and myself, and regarding which there can be no doubt.

The reader will see that Charency's arrangement of this third division (Plate XII) gives twelve days for the first interval, fourteen for the second, ten for the third, and fourteen for the last.

The character for Ix in this division is an unusual one, being as here represented.

Plate XIII.

FIRST DIVISION.

III.	III.		
Kan.	Lamat.	II–2.	XIII–2.
Oc.	Ix.	III–9.	XI–2.
Cib.	Cimi.	V–2.	
Ahau.	Eb.	X(?)–4.	
Ik.	Ezanab.	VII–5.	

SECOND DIVISION.

XIII.	XIII.		
Cib.	Oc.	V–1.	X–3.
Kan.	Ik.	XIII–9.	VII–2.
Lamat.	Ix.	III–1.	
Ahau.	Cimi.	II–5.	
Eb(?).	Ezanab.	IV–1.	

THIRD DIVISION.

X.	X.		
Oc.	Ahau.	III– 3.	XIII–3.
Cib.	Cimi	X–10.	
Ik.	Eb.	VII– 4.	
Lamat	Ezanab.	X– 2.	
Ix.	Kan.	XI– 4.	

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The character for Cimi is similar to that in the middle division of Plate VII.

Plates XIV and XV are so badly damaged that the numerals and day characters cannot be satisfactorily made out.

Plates XVI and XVII.

All the divisions of Plate XVII extend over and occupy the whole of Plate XVI.

FIRST DIVISION.

IV.		
Ahau.	VIII–4.	XI–11.
Eb.	I–6.	VI– 8.
Kan.	X–9.	IV–11.
Cib.	XIII–3.	
Lamat.		

SECOND DIVISION.

I.		
Caban.	IX– 8.	II–12.
Muluc.	III– 7.	– 4.
Ymix.	XIII–10.	
Been.	V–(?).	
Chicchan.	X–6.	

THIRD DIVISION.

XII.		
Chicchan.	III– 4.	VIII–10.
Caban.	VIII– 5.	XII– 5.
Muluc.	II– 8.	
Ymix.	X–(?).	
Been (?).	X–13.	

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Plate XVIII.

The column of day characters belonging to the first division of this plate is found in the first division of Plate XIX.

SECOND DIVISION.

IV.	IV.		
Cimi.	Ahau.	III–2.	IV–4.
Ezanab.	Eb.	VIII–5.	
Oc.	Kan.	I–5.	
Ik.	Cib.	XII–5.	
Ix.	Lamat.	IX–5.	

THIRD DIVISION.

X.			
Ezanab.	IV–5.	X–6.	XI–6.
Oc.	(I)–4.	IV–3.	V–4.
Ik.	VIII–4.	X–3.	VIII–3.
Ix.	II–4.	V–3.	XII–4.
Cimi.	(I)–III.		

Plate XIX.

The subject-matter of the first division of this plate occupies all the first division of Plate XVIII.

FIRST DIVISION.

IV.	
Ahau.	II–13.
Eb.	II–11.
Kan.	XIII–11.
Cib.	X–10.
Lamat.	IV– 7.

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SECOND DIVISION.

The red numerals in this division are doubled, as in the manner heretofore shown.

IX and IV.	
Cib.	XI and VI–10.
Lamat.	VII and II–11.
Ahau.	IX and I– 7.
Eb.	IX and IV– 2.
Kan.	

THIRD DIVISION.

III.	III.	
Muluc.	Cauac.	X– 7.
Men.	Chicchan.	III– 6.
Ymix.	Chuen.	VI– 3.
Manik.	Caban.	III–10.
Been.	Akbal.	

The character in this division interpreted as Chicchan is an unusual one, being in this form: .

The numerals on Plates XXIV and XXV and those in the upper division of Plate XXVI being partially obliterated, we have omitted them.

PLATE XXVI.

LOWER DIVISION.

XIII.	
Ahau.	XIII–13.
Eb.	XIII–13.
Kan.	XIII–13.
Cib.	XIII–13.
Lamat.	

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Plate XXVII.

UPPER DIVISION.

XI.	
Ahau.	X–13.
Eb.	XI–13.
Kan.	XI–13.
Cib.	XI–13.
Lamat.	

LOWER DIVISION.

IX.	
Chuen.	XIII (or XIV)–2.
Caban.	XI– 2.
Akbal.	VI– 2.
Muluc.	IX– 3.
Men.	VI–10.
Ymix.	IV– 4.
Manik.	IX– 3.
Been.	
Chicchan.	
Cauac.	

We find in the day column of this division a rather unusual character for Chicchan, which is here shown . As the day column entirely fills the space the numeral character which should be placed at the top is put at the side of the first day character. The first red numeral is as follows: . The right-hand dot in the original is imperfect, small, and crowded, and, as I believe, is there by mistake.

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PLATE XXVIII.

The characters of the first division are somewhat obliterated, as are also the numerals.

SECOND DIVISION.

ⓘ	
Men.	XI– 9.
Manik.	I– 9.
Cauac.	I– 9.
Chuen.	I–17.
Akbal.	V– 7.

THIRD DIVISION.

XI.	
Ahau.	VII– 2.
Eb.	ⓘ–7.
Kan.	XI–10.
Cib.	XI–13.
Lamat.	

FOURTH DIVISION.

Men.	I– 8.
Manik.	III–14.
Been.	XIII–13.
Eb.	I–13.
Chuen.	V– 3.

PLATE XXIX.

No day characters in the first, second, or third divisions.

FOURTH DIVISION.

XII	
Cimi.	VI–
Ezanab.	VI–13.
Oc.	III–10.
Ik.	XII– 9.
Ix.	

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Plate XXX.

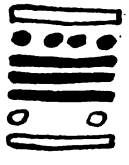
The left-hand compartments of the first, second, and third divisions of this plate are continuations of the first, second, and third divisions of Plate XXXI. The right-hand compartments of these three divisions form the commencement of, and contain the day characters for the first, second, and third divisions of Plate XXIX.

SECOND DIVISION.

(III?).
Ik.
Ix.
Cimi.
Ezanab.
Oc.

FIRST COLUMN, THIRD DIVISION.

Lamat.
Kan.
Ahau.
Cib.
Eb.



The numerals are placed in this form over the column. They are probably to be taken in pairs, the black characters representing two separate numbers, one stripe with the dots to be taken with the red numeral above, thus, V–9; the two remaining stripes with the red numerals below thus, VII–10.

RIGHT COMPARTMENT, THIRD DIVISION.

XIII.	
Muluc.	XIII–13.
Ix.	XIII–13.
Cauac.	XIII–13.
Kan.	XIII–13.
Muluc.	XIII–13.

There are no day characters in the fourth division.

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PLATE XXXI.

Day characters obliterated in the first division.

SECOND DIVISION.

Kan.	VII–11.
Cib.	V–11.
Lamat.	III–11.
Ahau.	?–11.
Eb.	IX–11.

THIRD DIVISION.

Chuen.	Oc.	Muluc.
Cimi.	Cimi.	Chicchan.
Akbal.	Ik.	Ymix.
Cauac.	Ezanab.	Caban.
Men.	Ix.	Been.

These columns all have the same numerals over them as the first column in the third division of Plate XXX, and they are arranged in the same way. There are no numerals in the spaces.

FOURTH DIVISION.

XIII.	XIII.	
Ymix.	Manik.	IX– 9.
Been.	Cauac	XII– 3.
Chicchan.	Chuen.	IX–10.
Caban.	Akbal.	XI– 2.
Muluc.	Men.	XIII– 2.

This division extends over to Plate XXX.

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Plate XXXII.

FIRST DIVISION.

?
Cib. XIII– 9.
Lamat. – 8.
Ahau. IX– 8.
Eb. II–17.
Kan. II– 9.

SECOND DIVISION.

(VIII?).
Ik. I– 6.
Ix. IX– 8.
Cimi. II– ?.
Ezanab. VIII–18.
Muluc.

THIRD DIVISION.

(?)
Ix.
XII.
Ix.
VI. In space, 5.
Ix.
XIII.
Cimi? or death symbol.

FOURTH DIVISION.

(?)
Lamat. III–13.
Ahau. III–13.
Eb. III–13.
Kan. III–13.
Cib.

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PLATE XXXIII.

FIRST DIVISION.

(?)	
Kan.	VII– 5.
Muluc.	II– 8.
Ix.	X– ?.
Cauac.	XIII–15.
Kan.	VIII– 8.

SECOND DIVISION.

Chuen.	Ymix.	II–11.
Caban.	Manik.	X?– 3.
Akbal.	Been.	VIII– 6.
Muluc.	Cauac.	IV, or IX– 6.
Men.	Chicchan.	?– 4.

THIRD DIVISION.

Column left compartment.	Column right compartment.
V?.	V.
Cauac.	Kan.
XII?.	XII.
Cauac.	Kan.
VI?.	VI.
Cimi?.	Cimi?.
XIII.	XIII.
Cimi?.	Cimi?.

FOURTH DIVISION.

Caban.	III–13.
Muluc.	III–13.
Imix.	III–13.
Been.	III–13.
Chicchan.	

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Plate XXXIV.

The first and fourth divisions belong to Plate XXXV.

SECOND DIVISION.

IV.		
Cimi.	XII–8.	VI–8.
Ezanab.	XIII–7?.	? ?.
Oc.	?–7.	IX?–7?.
Ik.	IV–8.	
Ix.		

THIRD DIVISION.

IV?.	
Ahau.	XI– ?.
Eb.	II–17.
Kan.	IV–15.
Cib.	
Lamat.	

Plate XXXV.

On this plate the day column in the second division is illegible.

FIRST DIVISION.

	(?)–10.	
Lamat.	VII–10.	VIII–10.
Been.	V?–10.	XII?–10.
Ezanab.	I–10.	
Akbal.	XI–10.	

THIRD DIVISION.

(?)	
Ymix.	X–10.
Been.	IX–11.
Caban.	IX–13.
Chicchan.	VIII–12.
Muluc.	I–12.

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FOURTH DIVISION.

IV.	
Ahau.	IX–11.
Chicchan.	I–17.
Oc.	III or IV–17.
Men.	
Ahau.	

PLATE I*.

No day characters are discernible in the first division of this plate.

THIRD DIVISION.

I?.	
Caban.	I– 6.
Ik.	I– 5.
Manik.	?–13.
Eb.	
Caban?	

PLATE II*.

FIRST DIVISION.

Manik.	XI– 4.
Eb.	IX–15?.
Caban.	
Ik.	
Manik.	

SECOND DIVISION.

Left column.		Right column.	
IX.		VIII?.	
Caban.	IX–12.	Ik.	II–13.
Ik.	IX–13.	Eb.	IV–13.
Manik.	IX–18?.	Manik.	IV–11.
Eb.		Caban.	
Caban.		Ik.	

This division is continued on PLATE I*.

Left column, third division, illegible.

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THIRD DIVISION.

Right column.

IV.	
Ahau.	
Eb.	XI–13.
Kan.	IV–19 or 9 and 10.
Cib.	
Lamat.	

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CHAPTER VIII.

A DISCUSSION OF DATES, WITH SPECIAL REFERENCE TO THOSE OF THE PEREZ MANUSCRIPT.

As I have heretofore touched upon this topic, I must ask the reader to refer to what is there stated, that I may dispense with repeating it here. But it is proper to remind him here that having proven, at least satisfactorily to myself, that the Ahau consisted of twenty-four years, this number is always to be understood whenever this period is mentioned in this discussion. In the second place, I start with the understanding that a 13th Ahau closed with the year 1542. I have already given my reasons, somewhat at length, for this conclusion. I may add that Dr. Valentini, in his article on the Perez Manuscript, arrives at the same conclusion. Brasseur[1] also concludes the 13th Ahau with the year 1542, as he gives the following explanation: "*Dans le XIII Ahau Katun, cest-a-dire, entre les années* 1518–1542"; thus counting twenty-four years to this period, notwithstanding his repeated statement elsewhere that it contained but twenty. We may therefore feel assured that we have in these dates—the 24th year of the XIII Ahau=A. D. 1542—one connecting link between the two chronological systems; and also that the author of the Perez Manuscript was correct in stating that at the period alluded to—the year 1536—"six years were wanting to the completion of the 13th Ahau."

In order that the reader may have before him as much of the data bearing upon this point as can be conveniently given here, I insert at this point a copy of the Perez Manuscript in the original, following it with the English translation.

[1] Hist. des Nat. Civ., II, 594, note 1.

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THE MAYA MANUSCRIPT.

MAYA.

Lai u tzolan Katun lukci ti cab ti yotoch Nonoual cánte anílo Tutul Xiu ti chikin Zuiná; u luumil u talelob Tulapan chiconahthan.

1. Cánte bin ti Katun lic u ximbalob ca uliob uaye yetel Holon-Chan-tepeuh yetel u cuchulob: ca hokiob ti petene uaxac Ahau bin yan cuchi, uac Ahau, can Ahau, cabil Ahau, cankal haab catac hunppel haab; tumen hun piztun oxlahun Ahau cuchie ca uliob uay ti petene cankal haab catac hunppel haab tu pakteil yete cu ximbalob lukci tu luumilob ca talob uay ti petene Chacnouitan lae.

2. Uaxac Ahau, uac Ahau, cabil Ajau; kuchci Chacnouitan Ahmekat Tutul Xiu hunppel haab minan ti hokal haab cuchi yanob Chacnouitan lae.

3. Laitun uchci u chicpahal tzucubte Ziyan-caan lae Bakhalal, can Ahau, cabil Ahau, oxlahun Ahau oxkal haab cu tepalob Ziyan-caan ca emob uay lae; lai u haabil cu tepalob Bakhalal chuulte laitun chicpahci Chichen Itza lae.

4. Buluc Ahau, bolon Ahau, uuc Ahau, ho Ahau, ox Ahau, hun Ahau uac kal haab cu tepalob Chichen Itza ca paxi Chichen Itza, ca binob cahtal Champutun ti yanhi u yotochob ah Ytzaob kuyen uincob lae.

5. Uac Ahau, chucuc u luumil Chanputun, can Ahau, cabil Ahau, oxlahun Ahau, buluc Ahau, bolon Ahau, uuc Ahau ho Ahau, ox Ahau, hun Ahau, lahca Ahau, lahun Ajau, uaxac Ahau, paxci Chanputun, oxlahun kaal haab cu tepalob Chanputun tumenel Ytza uincob ca talob u tzaclé u yotochob tu caten, laix tun u katunil binciob ah Ytzaob yalan che yalan aban yalan ak ti numyaob lae.

6. Uac Ahau, can Ahau, ca kal haabcatalob u hedzob yotoch tu caten ca tu zatahob Chakanputun.

7. Lai u katunil cabil Ahau, u hedzci cab Ahcuitok Tutul Xiu Uxmal. Cabil Ahau, oxlahun Ahau, buluc Ahau, bolon Ahau, uuc Ahau, ho Ahau, ox Ahau, hun Ahau, lahca Ahau, lahun Ahau, lahun kal haab cu tepalob yetel u halach uinicil Chichen Itza yetel Mayalpan.

8. Lai u katunil buluc Ahau, bolon Ahau, uac Ahau, uaxac Ahau, paxci u halach uinicil Chichen Itza tumenel u kebanthan Hunac-eel, ca uch

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ti Chacxib chac Chichen Itza tu kebanthan Hunac-eel u halach uinicil Mayalpan ichpac. Cankal haab catac lahun piz haab, tu lahun tun uaxac Ahau cuchie; lai u haabil paxci tumenel Ahzinte-yutchan yetel Tzunte-cum, yetel Taxcal, yetel Pantemit, Xuchu-cuet, yetel Ytzcuat, yetel Kakaltecat lay u kaba uinicilob: lae nuctulob ahmayapanob lae.

9. Laili u katunil uaxac Ahau, lai ca binob u pâ ah Ulmil Ahau tumenel u uahal-uahob yetel ah Ytzmal Ulil Ahau; lae oxlahun uudz u katunilob ca paxob tumen Hunac-eel: tumenel u dzabal u naatob; uac Ahau ca dzoci; hunkal haab catac can lahun pizi.

10. Uac Ahau, can Ahau, cabil Ahau, oxlahun Ahau, buluc Ahau, chucuc u luumil ich pâ Mayalpan, tumenel u pach tulum, tumenel multepal ich cah Mayalpan, tumenel Ytza uinicob yetel ah Ulmil Ahau lae; can kaal haab catac oxppel haab; yocol buluc Ahau cuchie paxci Mayalpan tumenel ahuitzil dzul, tan cah Mayalpan.

11. Uaxac Ahau lay paxci Mayalpan lai u katunil uac Ahau, can Ahau, cabil Ahau, lai haab cu ximbal ca yax mani españoles u yaxilci caa luumi Yucatan tzucubte lae, oxkal haab pâaxac ich pâ cuchie.

12. Oxlahun Ahau, buluc Ahau uchci mayacimil ich pâ yetel nohkakil: oxlahun Ahau cimci Ahpula: uacppel haab u binel ma dzococ u xocol oxlahun Ahau cuchie, ti yanil u xocol haab ti lakin cuchie, canil kan cumlahi pop tu holhun Zip catac oxppeli, bolon Ymix u kinil lai cimi Ahpula; laitun año cu ximbal cuchi lae ca oheltabac lay u xoc numeroil años lae 1536 años cuchie, oxkal haab paaxac ich pâ cuchi lae.

13. Laili ma dzococ u xocol buluc Ahau lae lai ulci españoles kul uincob ti lakin u talob ca uliob uay tac luumil lae, bolon Ahau hoppci cristianoil uchci caputzihil: laili ichil u katunil lae ulci yax obispo Toroba u kaba, heix año cu ximbal uchie.

[Translation.]

This is the series of "Katunes" that elapsed from the time of their departure from the land and house of Nonoual, in which were the four Tutul Xiu, lying to the west of Zuina, going out of the country of Tulapan.

§ 1. Four epochs were spent in traveling before they arrived here with Holon-Chantepeuh and his followers. When they began their journey toward this island it was the 8th Ahau, and the 6th, 4th, and 2d were spent

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in traveling; because in the year of the 13th Ahau they arrived at this island, making together eighty-one years they were traveling, between their departure from their country and their arrival at this island of Chacnouitan. (Years, 81.)

§ 2. The 8th Ahau, the 6th Ahau; in the 2d Ahau arrived Ajmekat Tutul Xiu, and ninety-nine years they remained in Chacnouitan. (Years, 99.)

3. In this time also took place the discovery of the province of Ziyancaan, or Bacalar, the 4th Ahau and 2d Ahau, or sixty years, they had ruled in Ziyan-caan when they came here. During these years of their government of the province of Bacalar occurred the discovery of Chichen Itza. (Years, 60.)

4. The 11th Ahau, the 9th, 7th, 5th, 3d, and 1st Ahau, or 120 years, they ruled in Chichen-Itza, when it was destroyed, and they emigrated to Champoton, where the Itzaes, holy men, had houses. (Years, 120.)

5. The 6th Ahau they took possession of the territory of Champoton; the 4th Ahau, 2d, 13th, 11th, 9th, 7th, 5th, 3d, 1st, 12th, 10th, and 8th Champoton was destroyed or abandoned. Two hundred and sixty years, the Itzaes reigned in Champoton, when they returned in search of their homes, and they lived for several katunes under the uninhabited mountains. (Years, 260.)

6. The 6th Ahau, 4th Ahau, after forty years, they returned to their homes once more, and Champoton was lost to them. (Years, 40.)

7. In this Katun of the 2d Ahau, Ajcuitok Tutul Xiu established himself in Uxmal; the 2d Ahau, the 13th, 11th, 9th, 7th, 5th, 3d, 1st, the 12th and 10th Ahau, equal to 200 years, they governed in Uxmal, with the governors of Chichen-Itza, and of Mayapan. (Years 200.)

8. These are the Katunes 11th, 9th, and 6th Ahau. In the 8th Ahau the governor of Chichen-Itza was deposed, because he murmured disrespectfully against Hunac-eel. This happened to Chacxibchac of Chichen-Itza, governor of the fortress of Mayapan. Ninety years had elapsed, but the 10th year of the 8th Ahau was the year in which he was overthrown by Ajzinte-yutchan, with Tzuntecum, Taxcal, Pantemit, Xuch-uenet Ytzcuat, and Kakaltecat; these are the names of the seven Mayalpanes. (Years 90.)

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9. In the same Katun of the 8th Ahau they attacked Chief Ulmil, in consequence of his quarrel with Ulil, Chief of Yzamal; thirteen divisions of troops he had when he was routed by Hunac-eel; in the 6th Ahau the war was over, after 34 years. (Years 34.)

10. In the 6th Ahau, 4th, 2d, 13th, and 11th Ahau, the fortified territory of Mayapan was invaded by the men of Itza, under their Chief Ulmil, because they had walls, and governed in common the people of Mayapan: eighty-three years elapsed after this event, and at the beginning of the 11th Ahau Mayapan was destroyed by strangers of the Uitzes, Highlanders, as was also T'ancaj of Mayapan. (Years 83.)

11. In the 8th Ahau, Mayapan was destroyed, the epochs of the 6th, 4th, and 2d Ahau elapsed, and at this period the Spaniards for the first time arrived, and gave the name of Yucatan to this province, sixty years after the destruction of the fortress. (Years 60.)

12. The 13th and 11th Ahau, pestilence and small-pox were in the castles. In the 13th Ahau Chief Ajpula died; this year was counted toward the east of the wheel, and began on the 4th Kan. Ajpula died on the 18th day of the month Zip, in the 9th Ymix; and that it may be known in numbers, it was the year 1536, sixty years after the destruction of the fortress.

13. Before the termination of the 11th Ahau the Spaniards arrived. Holy men from the east came with them when they reached the land. The 9th Ahau was the commencement of baptism and Christianity; and in this year was the arrival of Toroba (Toral), the first bishop.

Before entering upon a discussion of this manuscript I will attempt to connect the two chronological systems at one or two other points, in reference to which we find some data left on record besides that found in the manuscript.

The destruction of Mayapan (the last one, if there were two, as stated by this authority) was an important event likely to be remembered by the people at the time of the Spanish conquest, as it was the beginning of a marked change in the condition of affairs in Yucatan, and occurred, at the earliest, not more than a hundred years before the first appearance of these invaders on the coast of this peninsula.

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As I have already shown, the important event alluded to by Perez as occurring in the year 7 Cauac of the 8th Ahau, which he fixes in 1393, really happened in 1435, as we see by correcting the manifest error of his calculation. This event, I believe, was the destruction of Mayapan, which this manuscript asserts took place in the 8th Ahau.

The two statements in this document—first (in the 11th paragraph), that the first arrival of the Spaniards, at the close of the 2d Ahau (1518), was 60 years after the fall of Mayapan; second (12th paragraph), that the year 1536 was 60 years after this event—cannot both be correct; one or the other, or both, must be erroneous. Rejecting the latter, and counting three Ahaues, the number the author gives, at 24 years each, instead of 20 (the length at which he estimates them), we have 72 years, which, deducted, carries us back to 1446. This corresponds exactly with Landa's computation. Herrera[1] says that this happened, "according to the reckoning of the Indians, about *seventy years* before the Spaniards came into Yucatan," which would place it in 1448. According to the tables I have given, the 8th Ahau included the years 1423–1446, which agrees exactly with Brasseur's calculation (*Hist des Nat. Civ.*[2]), in which work he appears to have adopted 24 years as the number to an Ahau, instead of 20, as in his notes to Landa and the Perez Manuscript. As I was not aware of this fact until after the preceding part of this paper was delivered for publication, I call attention to it now, as it is apparent from this that his comparison of the dates of the two systems must agree throughout precisely with what is given in my Table XVII.

If we are correct in counting 24 years to an Ahau, then it is certain the 8th must have included from 1423 to 1446; and if the document referred to by Perez (which unfortunately was lost) was right in stating that 7 Cauac was the year of the destruction, it occurred in 1435.

We learn from Herrera (*loc. cit.*) that this city was destroyed five hundred years after it was built. As a matter of course, this is given in round numbers, and cannot be considered as exact; yet it will afford some aid in our comparison. Deducting 500 from 1435 gives us the year 935 as the date of the founding of the city, which may be considered as at least approximately correct. Counting back by Ahaues, we ascertain that this would fall in the 11th of the preceding grand cycle.

[1] Dec. III, lib. vi, cap. 3. [2] II, 593.

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Although, as shown by Table XVII, the grand cycles, if counted from the year 1 of each period, would begin with the 1st Ahau, yet, as the Indians chose, for some reason, to begin these periods with the 13th, our calculations must correspond with this arbitrary selection. I therefore give here a brief table of cycles, with the corresponding years of our era, running backward:

	Years.
Fourth grand cycle	1519–1830
Third grand cycle	1207–1518
Second grand cycle	895–1206
First grand cycle	583– 894

The numbers given the grand cycles are (for the present, at least) arbitrary, given simply as a means of reference. We see from this table that the year 935 would fall in the grand cycle numbered 2, and, as before stated, in the 11th Ahau. Referring to this manuscript again, we see that Mayapan is first mentioned in the 7th paragraph, where it is stated that "the 2d Ahau, 13th, 11th, 9th, 7th, 5th, 3d, 1st, 12th, and 10th Ahau, 200 years, they [the Tutul Xiu] governed in Uxmal with the governors of Chichen-Itza and *Mayapan.*"

Here we find our 11th with but two Ahaues preceding it, or, as we judge from the preceding clause—"In this Katun of the 2d Ahau"—but one and part of another. Supposing Mayapan to have been in existence at the commencement of the periods here named, it would carry us back only some forty or fifty years beyond Herrera's general statement; but this is more than accounted for by the difference in the estimated length of the Ahau.

If we count the Ahaues necessary to complete the number from the 2d in the commencement of the seventh paragraph to the 2d in the eleventh paragraph when the Spaniards first appeared, filling up the lacunæ and making the correction in the eighth paragraph suggested by Dr. Valentini, we shall find the number to be as follows:

2, 13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2.
13, 11, 9, 7, 5, 3, 1, 12, 10, 8, 6, 4, 2.

Making 27 Ahaues, or 648 years.

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Deducting this from 1518, the time when the Spaniards appeared on the coast, it carries us back to the year 870. If carried back only to the first year of the 11th of the first series, it gives the year 918, which differs but 17 years from the date (935) given above from Herrera's statement, a difference less than one Ahau. I am inclined, therefore, to believe the first line of the 8th paragraph properly belongs to the 7th, and that it was the intention of the writer to say that "with the governors of Chichen-Itza and Mayapan these Katunes, 11th, 9th to the 6th." In the 8th Ahau trouble arose between the parties to the compact, but the war did not end until in the 6th. It is probable, therefore, that the chronicler's data mentioned the 11th Ahau as the beginning of the compact, and that this was near the time when Mayapan was built.

According to Herrera, Chichen-Itza was already in existence when Cuculkan appeared and founded Mayapan. He further states that "whilst the Cocomes [who were given authority immediately after Cuculkan's departure] lived in this regular manner, there came from the southward, and the foot of the mountains of Lacando, great numbers of people, looked upon for certain to have been of the province of Chiapa, who traveled forty years about the deserts of Yucatan, and at length arrived at the mountains that are almost opposite to the city of Mayapan, where they settled and raised good structures, and the people of Mayapan some years after, liking their way of living, sent to invite them to build houses for their lords in the city. The *Tutul-Xiu*, so the strangers were called, accepting of their courtesy, came into the city, and their people spread about the country, submitting themselves to the laws and customs of Mayapan, in such peaceable manner that they had no sort of weapons, killing their game with gins and traps." (*Loc. cit.*)

This agrees precisely with the order of events in the Manuscript, except that nothing is mentioned corresponding with the 40 years of the 6th paragraph

In the prophecy by Nahau Pech, preserved in Lizana's work and copied by Brasseur into the chrestomathy of his Maya grammar, these passages occur:

"We have come now to the fourth period," or perhaps more correctly,

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3. "The time to the fourth series of epochs draws to a close,"
4. "In which shall be ushered in the day of the true God." Also,
8. "Such is the prophecy of Nahau Pech, the priest,
9. "At the time of the fourth great cycle (*Ahau Katun*).
10. "In the commencement actual of the series of epochs."[1]

The rendering of *Katunil*, here translated "series of epochs," is uncertain. In Stephens's translation of the Perez Manuscript it is sometimes rendered "Katunes," sometimes "Katun"; in Brasseur's translation, "periods," "cycle," and in Lizana's, "edades" or ages The definition of the word as given in Brasseur's lexicon (it is not found in full in Perez's lexicon) is "Ensemble des époques ou cycles."

It is true that "Ahau Katun" is sometimes used as equivalent to "Ahau," but this is very rarely, if ever, found in the few Maya documents that remain to us. The true rendering appears to be "Grand or Great Cycle," as given in the 9th line of Nahau Pech's prophecy. If this interpretation, which is that given by Abbe Brasseur, is the correct one, we then find here the number of one of the great cycles. To suppose that the number here refers to the Ahau will carry this prophecy back to the year 1470–'71, which is improbable.

The prophecy of Chilam Balam commences with *Ox lahun ahau u hedzinil katun*, the literal translation of which is, according to Brasseur, "The thirteenth Ahau its foundation of the Katun"; probably equivalent to Lizana's Spanish "In the end of the thirteenth age."

It is obvious from the contents of this prophecy that it was made after the arrival of the Spaniards in that country, and after their appearance and religion became known; hence, as it was delivered in the 13th Ahau, it must have been between the years 1518 and 1541. It is not probable that

[1] Dr. Brinton, following Lizana, translates the whole prophecy as follows:
1. "What time the sun shall brightest shine,
2. Tearful will be the eyes of the king.
3. Four ages yet shall be inscribed,
4. Then shall come the holy priest, the holy god.
5. With grief I speak what now I see.
6. Watch well the road ye dwellers in Itza.
7. The master of the earth shall come to us.
8. Thus prophecies Nahau Pech, the seer,
9. In the days of the fourth age,
10. At the time of its beginning."

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the one by Nahau Pech (a well-known family at the time of Montejo's arrival) is many years older, probably dating the first year of the 13th Ahau, which would, according to his statement, be the first of the 4th great cycle.

If we assume that these great periods were numbered in regular order, 1, 2, 3, 4, which is more than probable, as they were but seldom referred to, then we have evidence here that the Itzae record ran back three great cycles—936 years before the year A. D. 1519, that is to the year 583 of the Christian era. In order that we may compare this calculation with the manuscript, I will give here a list of the Ahaues, commencing with number 8, previous to the beginning of the 1st great cycle as counted after Nahau Pech, with the years of the Christian era corresponding to their last years.

Ahaues preceding.		First Great Cycle.		Second Great Cycle.		Third Great Cycle.	
Ahaues.	Last years.	Ahaues.	Last years.	Ahaues.	Last years.	Ahaues.	Last years.
10th	486	13th	606	13th	918	13th	1230
8th*	510	11th	630	11th	942	11th	1254
6th	534	9th	654	9th	966	9th	1278
4th	558	7th	678	7th	990	7th	1302
2d	582	5th	702	5th	1014	5th	1326
		3d	726	3d	1038	3d	1350
		1st	750	1st	1062	1st	1374
		12th	774	12th	1086	12th	1398
		10th	798	10th	1110	10th	1422
		8th	822	8th	1134	8th	1446
		6th	846	6th	1158	6th	1470
		4th	870	4th	1182	4th	1494
		2d	894	2d	1206	2d	1518

The three great cycles completed at the time of Nahau Pech's prophecy (if such be the proper interpretation of his words) I presume beign

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with the founding of Chichen Itza, which, according to my calculation, would be about 583–606 (the 13th Ahau). It is a little remarkable that the first mention of this city occurs in the close of the third paragraph, exactly where the 13th Ahau must be inserted to fill a hiatus.

The number of years given and periods mentioned in the first three paragraphs cannot by any possible explanation be made to agree with each other. This part of the history of the Tutul-Xiu race is doubtless made up from a dim tradition in reference to which no chronological statement could be made. As any attempt to determine the length of time they were wandering, from the date of their departure from Tulapan until they settled at Chichen-Itza, would be wholly conjectural, we will, perhaps, be as near right as any other guess, if we assume that the 8th Ahau of the second paragraph is the same as the 8th of the first, in other words, that the numbers in the second are but a recapitulation of those in the first, and that the 13th in the latter is the one which precedes the 11th in the fourth paragraph. Supposing they started on their travels in the 8th Ahau, this would bring this event between the years 486–510.

As the author of this manuscript counted twenty years to an Ahau and I count twenty-four, our lists cannot possibly agree. If there are any numbers given, connected with particular and noted events, which numbers were given in the author's data, with these my enumeration, if correct, might coincide. The fall of Mayapan in the 8th Ahau, the appearance of the Spaniards on the coast in the 2d, and the death of Ajpula in the 13th, I think may be relied upon as events correctly dated.

If we count the years enumerated from the 2d Ahau in the seventh paragraph, where Mayapan is first mentioned, to the 8th, in the eleventh paragraph, when the second destruction of this city occurred, we find the number to be 367; adding in the missing epochs at twenty years each, we have 527, which agrees very well with Herrera's statement. But this gives us something over twenty-six of these periods, whereas the correct number would be twenty-two. The exact numbers (of years) given in the ninth and tenth paragraphs render it possible that these were obtained from the author's data.

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CHAPTER IX.

INSCRIPTIONS ON THE PALENQUE TABLET.

In referring to the Tablet I will make use of Dr. Rau's scheme of numbering and lettering the characters which is given below. In order to avoid introducing small cuts of separate characters, I have requested that a copy of his plate of the entire Tablet be inserted (Plate IX).

A slight examination of this tablet is sufficient to convince any one familiar with the characters of the Manuscript Troano that there are here symbols of days and months corresponding almost exactly with those of that work. Whether the Maya calendar was the one used cannot be determined with certainty, but that it was very similar cannot be doubted. I shall assume for the present that it was, but in order that the reader may have before him the data necessary for comparison will introduce here the names of the days of the Chiapan (or Tzendal) and Soconuscan calendar in the order given by Veytia, and also of the Quiche and Cakchiquel calendars as given by Bancroft.

Chiapan (Tzendal?) and Soconuscan.	Quiche and Cakchiquel.
Votan.	Imox.
Chanan or Ghanan.	Ig.
Abah or Abagh.	Akbal.
Tox.	Qat.
Moxic.	Can.
Lambat.	Camey.
Molo or Mulu.	Quieh.
Elab or Elah.	Ganel.
Batz.	Toh.
Evob or Enob.	Tzy.
Been.	Batz.
Hix.	Ci.
Tziquin.	Ah.

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CHIAPAN (TZENDAL?) AND SOCONUSCAN.	QUICHE AND CAKCHIQUEL.
Chabin or Chahin.	Yiz or Itz.
Chic or Chiue.	Tziquin.
Chinax.	Ahmak.
Cahogh or Cabogh.	Noh.
Aghual.	Tihaz.
Imox or Mox.	Caok.
Igh or Ygh.	Hunahpu.

I shall take for granted that the inscription commences with the large character in the upper left-hand corner, but whether it is to be read in columns from top to bottom, or in lines from left to right, remains to be discussed; the tendency of belief at present appears to be that it is to be read in lines from left to right.

As I have demonstrated, satisfactorily to myself at least, that in the Manuscript Troano the characters are, as a general rule, placed in columns to be read from the top downwards, but that, where circumstances require it, they are placed in lines to be read from left to right, we will be justified

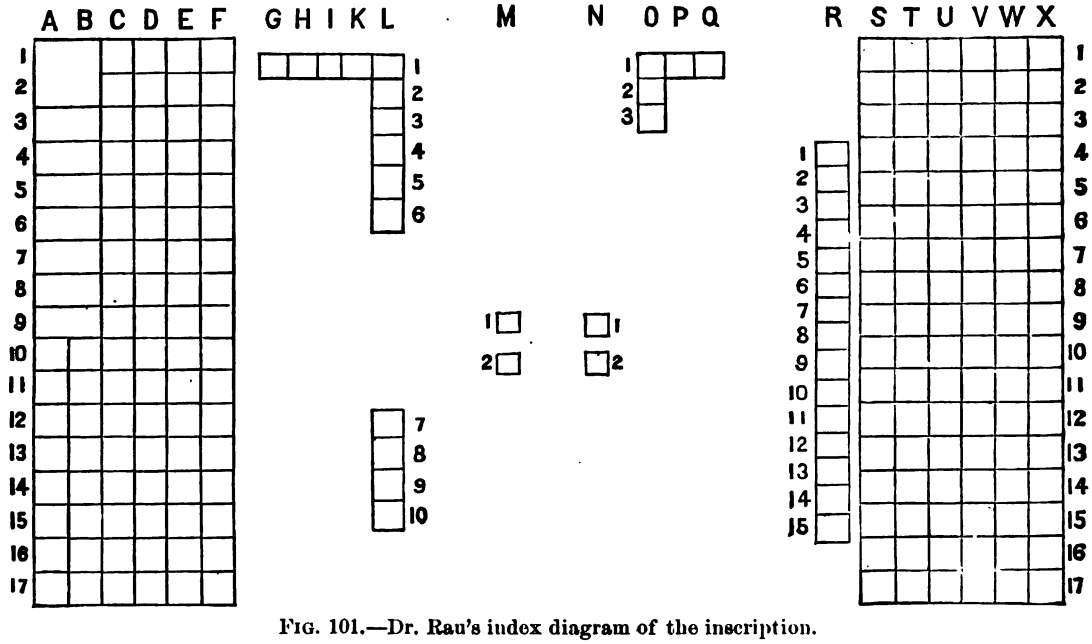

FIG. 101.—Dr. Rau's index diagram of the inscription.

in assuming the same rule applies to this tablet, especially as we here see single columns and single lines. But let us examine the inscription carefully and see if we can find anything in it that will aid us in deciding this

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point. In doing so we may profit by the facts learned in reference to the Manuscript Troano on this subject, and the method of comparing characters used by Professor Holden in his "Studies in Central American Picture Writing."[1]

Referring to the Palenquean group as shown in Plate IX, we observe that the first seven characters of the two columns immediately below the large initial are united so that each forms one compound character. If read in columns the natural inference from this would be that the remaining characters of these two columns are to be read by twos, thus: A 10 and B 10 (Dr. Rau's scheme), then A 11 and B 11, next A 12 and B 12, and so on to the bottom. If this supposition be correct, then it is more than likely that the remaining columns on the side tablets are to be read in the same way, a view favored by the fact that each one of these tablets contains six columns.

I call attention now to characters D 13, C 14, and D 14, which are often repeated in the inscription, varying only in the numerals—dots, or balls, and lines placed at the top and left side. If we represent these characters by letters thus: D 13 by *a*, C 14 by *b*, and D 14 by *c*, we have here this order

	a
b	*c*

. Referring now to E 5, F 5, and E 6, we find the same three characters following each other in the same order, but placed thus:

a	*b*
c	

, and, what is significant, if we include the next, F 6, we have the right portion of the first four (of the seven) double characters, but the order is reversed. At F 15, E 16, and F 16 we again have our three characters *a*, *b*, *c*. In the single column R we see *a* and *b*. At S 6 and T 6 we have the three, but here *b* and *c* are united in one compound character. At S 12 and T 12 we see *a* and *b*; at U 3, V 3, and U 4; also at U 8, V 8, and U 9; also V 13, U 14, and V 14; at W 1, X 1, and W 2, and at X 11, W 12, and X 12, we find the same three characters following each other in the same order. We shall hunt in vain for any such combination of these characters between the second and third or fourth and fifth columns of either slab, nor can we find the three following each other in any column or line except in the four double characters.

[1] First Ann. Rep. Bureau of Ethnology.

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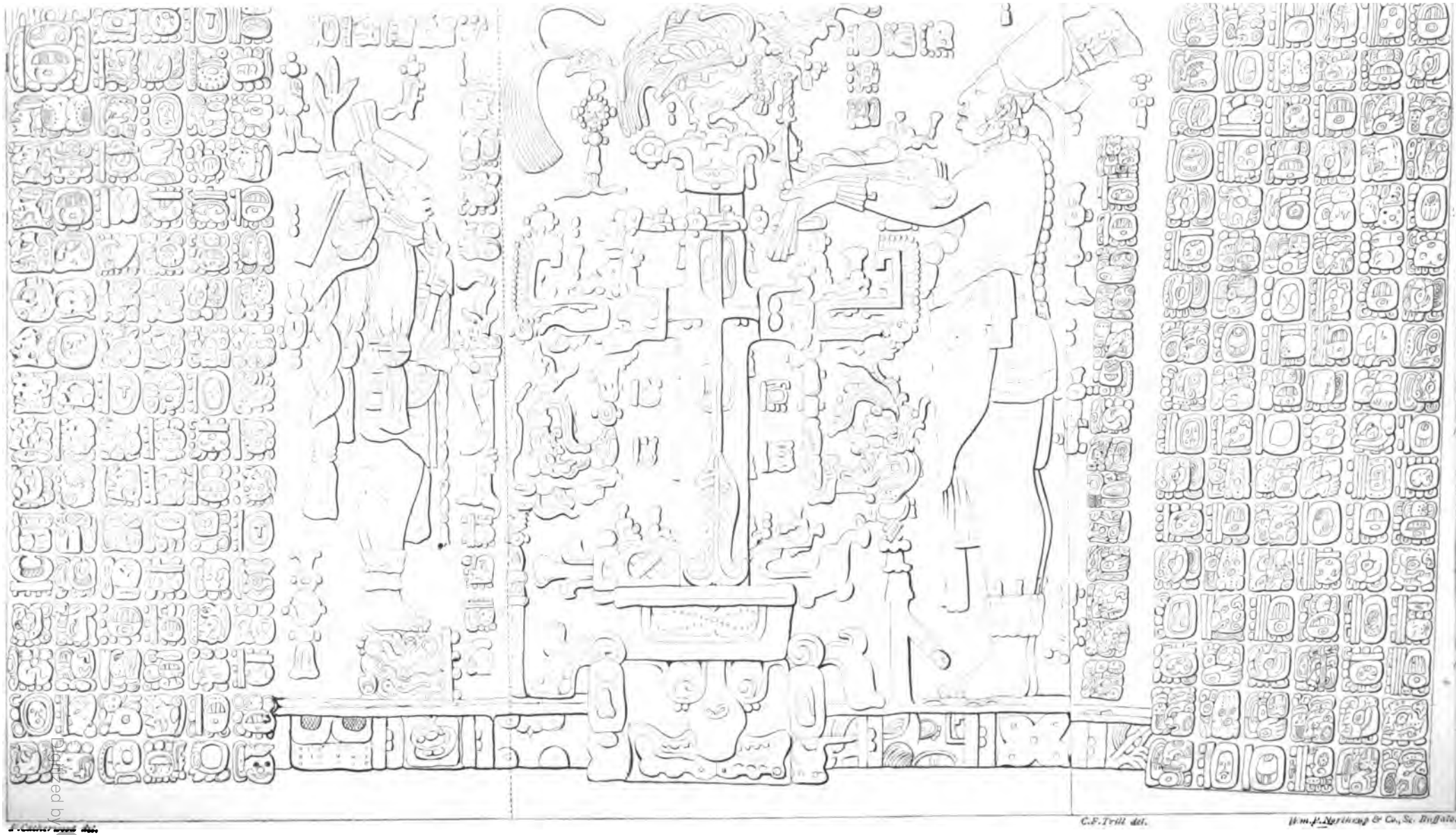

THE PALENQUEAN GROUP OF THE CROSS. FROM SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE, VOL. XXII.

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As another example we select the two characters, S 1 and T 1, which are often found associated; as at U 6, V 6; U 16, V 16; W 3, X 3; and at W 17 and X 17, we find them in the same line, but always in the two columns they should be, if the theory above advanced as to the order in which the inscription is to be read be correct. If the first of these two characters (which we may designate by *m* and *n*) should fall in the right of the two associate columns, then the other should be one line lower in the left of the two columns, thus:

	m
n	

. Such we find to be the case by referring to T 7, S 8, to T 15, S 16, and V 11, U 12. But the evidence does not stop here. By examining Dr. Rau's photograph of the right tablet, we may extend this combination. We observe that S 6, our *a*, and T 6, our *b* and *c* combined, are followed in S 7 by a character not heretofore alluded to. This we will designate by *d*. Following these, at T 7 is our *m*, at S 8 our *n*, and at T 8 *Kan*, as shown in the annexed diagram 1.

a	*b* *c*
d	*m*
n	*Kan*

1.

Commencing with V 13 we find the same combination, except that one additional character is introduced thus: V 13 *a*, U 14 *b*, V 14 *c*, U 15 *d*, V 15 *x*, (the introduced character is *x*,) U 16 *m*, V 16 *n*, U 17 *Kan*, as shown in diagram 2.

	a
b	*c*
d	*x*
m	*n*
Kan	

2.

Referring now to the figure of the Tablet on the back wall of Altar Casa No 3, forming the frontispiece of Stephen's "Central America," Vol. II, we see that there are four columns of characters on each side. At the bottom of the second column of the right side we find our character *a*, and at the top of columns three and four our characters *b* and *c* precisely as they should follow according to our theory.

Turning again to our Plate IX and going over the entire inscription in this way, taking two columns together, thus, AB, CD, EF, ST, UV, and WX, we shall find frequent repetitions of such combinations, not to be found in any other way. The full force of this statement cannot be understood except by a thorough and careful study of the plate. If I am cor-

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rect in this opinion we will thereby be enabled to determine some doubtful characters, as, for example, that F 7, E 8 are the same as S 1, T 1, &c.

According to this theory, the lines and columns in the middle portion of the Tablet should be read from the left to the right along the lines until a column is reached, and then down the column thus: G, H, I, K, to L, and then down the L column; down the O column then P and Q. Now, let us test this: In O 3 we see the hand of our character *m*, although the loop is to the right. If it is the same as *m*, then P 1 should be our *n*; but the character as given by Catherwood is too imperfect to see any resemblance. But if we turn to Waldeck's plate or Dr. Rau's copy (Palenque Tablet, p. 33, Fig. 7), we see the head and protruding tongue characteristic of character *n*.

These facts, I think, are sufficient to establish the correctness of my theory.

The lines and dots at the left and on the top of the characters I am satisfied are numerals having the same signification as those in the Manuscript—that is, a single dot 1; two dots, 2, and so on; a single line, 5; two lines, 10, and so on. Those on the top of the characters I think correspond with the red numerals in the Manuscript, for if we examine them we find none of them exceed thirteen. Those on the side I think refer in some cases to the number of the month, in others to the day of the month or the number of the day. Where the character is the symbol of a day, and has numerals also on top, those on the side I think refer to the number of the month, as they never exceed 18. When the character is the symbol of a month, then, they denote the day of the month, as we see that in some cases they exceed 18, but never exceed 20. Where the character is the symbol of a day and has numerals at the side only, these I think denote the number of the day, as they never exceed 13. The little balls and loops at the bottom, and also the loops so frequent at the left side, and occasionally found on the top of the characters, have been, and to a certain extent are yet, a profound mystery; but a careful study of the little loops at the left side, and also of part of those at the top, will show that they have no signification whatever, but are left to fill out the squares and to form supports or guards to the little ball (or balls)—or numeral character for 1 (or 2)—in connection with which they are chiefly used. If we examine the inscrip-

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tion carefully, we shall find that they are never placed at the left where the outer or left line of the numeral character is 3, 4, or 5. On the contrary, they are always (with two exceptions) present where the left numeral line is one—that is, a single dot—and occasionally where there are two.

The exceptions are R 2 and T 2; but an examination of the tablet in the National Museum shows very clearly that they have been broken off the latter and that they were probably originally on the former. Why do they accompany only those numerals with one or two dots at the left and no others? My answer is, simply to complete the square. This will probably explain the presence of small characters or irregular balls on the foreheads of some of the heads. The loops and balls at the bottom of the characters probably have some particular signification, as something similar is observed in the Manuscripts, as, for example, under the symbol for the month Pax.

I will now ask the reader to refer to Plate IX, representing the tablet. He will observe on each side and near to the upright of the cross two characters—four in all, two in the column marked M and two in that marked N. He is aware, from what has been shown in the previous part of this paper, that in the Tro. Manuscript each division of the plates, or each compartment, has at the left a column of days, usually five in number, though in a few instances there are but four. The four symbols by the cross I think are for precisely the same purpose as these day columns, and that the numeral five, at the side of each, probably corresponds with that placed over the columns. As the upper left-hand character (M 1) is *Ezanab*, the equivalent of *Chinax* in the Chiapan calendar, which, according to Veytia's list, is one of the year-bearers, we might presume the four represent the four year-bearers, *Votan*, *Lambat*, *Been*, and *Chinax*, or their Maya equivalents *Akbal*, *Lamat*, *Been*, and *Ezanab*. But one objection to this supposition is that the lower character at the right (N 2) does not correspond with the symbol of either of these days, but appears to be the same as (B 10) on the left slab, which is probably Cimi of the Maya or Tox of the Chiapan list of days. But in these four characters Catherwood, usually so accurate, appears to be at fault, and Waldeck correct.

Turning now to the general inscription on the left and right, I will endeavor to pick out and name the day characters, first notifying the reader

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that there are two classes of these, one with numerals at the left side only, the other with numerals both above and at the side.

The little loops are not counted as units except when I am satisfied from an examination of the right slab in the museum that they denote spaces from which the balls have fallen. Where I am satisfied the character represents a day, but cannot determine what day, this fact will be indicated by an interrogation-point; the names in reference to which I am in considerable doubt will also be followed by an interrogation-point. The capital letters with numbers attached are given to locate the characters by Dr. Rau's scheme.

Days indicated on the Tablet, with their accompanying numerals.

B 10. The day 5 Cimi.
B 16. The day 13 —— ?.
C 9. The day 13 Manik ?.
D 1. The day ? Chuen, ? month.
D 5. The day 9 Chuen, 2d month.
D 13. The day 12 Chuen, ? month.
E 10. The day 7 Chuen, 2d month.
F 11. The day 3 —— ? (Oc.?).
F 15. The day 7 Chuen, 13th month.
L 7. The day 8 —— ?, 12th month.
E 5. The day 11 Chuen, 2d ? month.
S 4. The day 5 —— ?.
S 11. The day ? Lamat.
S 14. The day 2 —— ?.
T 2. The day 11 Kan.
T 10. The day 6 —— ?.
T 17. The day 8 Ahau.
U 7. The day 3 Ezanab.
U 10. The day 5 Ahau ?.
V 7. The day 11 —— ?.
V 12. The day 5 —— ?.
W 1. The day 4 Chuen, 17th month.
X 5. The day 2 Ymix.
X 10. The day 7 Kan.
X 14. The day 3 Eb, 11th month.

A 16. The day 1 Ahau.
C 2. The day 8 —— ?.
C 11. The day 10 —— ?.
D 3. The day 4 Ahau.
D 11. The day 8 —— ? (Eb ?).
E 1. The day 9 Manik ?.
E 9. The day 9 Manik ?.
F 10. The day 10 —— ?.
F 12. The day 9 Manik ?.
G 1. The day 9 —— ?.
O 1. The day 8 Muluc.
S 6. The day 5 Chuen, 14th month.
S 12. The day 3 Chuen, 9th month.
S 15. The day 6 Chuen, 3d month.
T 8. The day 1 Kan.
T 14. The day 10 —— ?.
U 3. The day 1 Chuen, 18th month.
U 8. The day 10 ? Chuen, 18th month.
U 17. The day 5 Kan.
V 10. The day ? Chuen, 3d month.
V 13. The day 6 Chuen, 16th month.
W 15. The day 8 Chuen, 2d month.
X 6. The day 1 Chuen, 1st month.
X 11. The day 4 Chuen, 7th month.
R 2. The day 11 Chuen, 6th month.

Of this list, T 10, T 14, and V 7 may represent the month *Xul* instead of a day. It is possible that C 5 (8 Cauac ?), F 6 (2 Cauac), and U 2 (9 Cauac) should be added to the list as representing the days noted in parenthesis. The day Chuen appears to be much oftener indicated than any

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other. We shall also find that the same thing is true in reference to one of the months. I am in great doubt as to the character rendered Manik, which here resembles the Greek *tau*. S 14 is probably the symbol of *Lamat*.

One singular fact to be noticed is that the form of the Kan symbol—for example, U 17, as given in Dr. Rau's photograph—is more like Landa's figure than the Kan symbol in the Tro Manuscript.

As I find no month characters in the Manuscript to assist me in judging of the variations in form, and as I have not thoroughly studied those in the Codex, I feel greater uncertainty as to those found on the Tablet than I do in regard to the day characters. *Pax* seems to be the month oftenest represented; in fact, but few others appear to be indicated. The following characters I think represent this month:

C 14, F 5, R 3, T 12, U 14, V 3, V 8, W 7, X 1, and X 15.

The following are also probably month symbols:

F 1, L 9, T 4, U 1, V 17, W 11.

I am satisfied from the presence of numerals that there are other day and month symbols than those mentioned, but on account of my doubt as to which class they belong will not attempt now to decide.

If the reader will examine carefully the character V 14, especially on Dr. Rau's photograph, he will see that it is almost identical with that in the Manuscript I have rendered *pecuah* "tortilla of maize" (see Fig. 64).

Comparing this with the large initial, we find but a slight difference between the two; in the latter the comb-like figures are drawn down to the sides and the loops are placed above. In this the form of the central oval is not to be relied upon as strictly correct, as the lines are too freely rounded; still we presume it is slightly different from the little upper circle in V 14. Supposing the Maya language to have been used, and the characters on the Tablet to have the same signification as similar characters in the Manuscript, we should find in this initial sounds closely resembling those in *pecuah;* as the bars are interlaced, I presume the first syllable should be *pech* or *pach*. Turning to Landa's Relacion (264), we find that "In the month *Pax* they [the Mayas] celebrated a festival named *Pacumchac*, on which occasion the chiefs and priests of the inferior villages assembling with those of

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the more important towns, having joined together, they passed into the temple of *Citchaccoh*," &c.[1] If we interpret this character *Pacumchac*, we at once find a satisfactory explanation of the repeated occurrence of the symbol for *Pax* in the inscription. From Landa's description, which is somewhat confused, I judge this was one of their chief festivals, but nothing appears in his statement that accords with the scene on the middle slab. This, however, cannot be properly urged as an objection to my rendering; *first*, because there were doubtless many formalities which he does not mention; *second*, because the ceremonies of this festival as practiced at Palenque may have been quite different from those observed by Landa; *third*, there are some reasons for believing, even from Landa's words, that during this festival petitions for rain and abundant crops were offered. I presume also that during this festival took place the rejoicing over the first fruits of the maize harvest. I may as well state here as elsewhere that I do not think the offering made by the priest on the right is an infant; the probability is that it is a dough image. Although we see what appear to be the body and limbs, we have to assume that the head wears a mask to believe it to be the body of a child. If it is the figure of a child, then the scene represents a special occasion when the sacrifice was made to avert some impending danger. The difference in the height of the two priests favor the idea that the artist referred by his figures to particular persons, if not to a special occasion. Finally, it is possible that although the inscription relates chiefly to this festival others are also alluded to. But be this as it may, I have reached my conclusion as to the rendering by legitimate steps.

The second compound character in the column is composed of three parts, the two to the right, which are alike, resembling, in some respects, the symbol of Imix, and in others, if the marks can be trusted, the hieroglyph of Cauac and *cu*. We find almost precisely the same combination in the right-hand (second) column, Plate XX of the Manuscript, except that the two similar parts are above the face. The face in this case is almost exactly like that I have interpreted *Xamin*, "north." What is also a little significant, we find immediately below it the Pax or stone symbol just as we do here.

[1] Appendix No. 3, O.

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Another fact which should be taken into consideration is that U 2 appears to be identical with the two similar parts of this character. It undoubtedly denotes a month or day. If a month, it is impossible for me to determine which; if a day, it is undoubtedly *Cauac*, or the Chiapan equivalent, *Cahogh*.

Turning to the middle plate between pages 158 and 159, Stephens's Central America, Vol. I, we observe that the third group from the bottom of the right column appears to be substantially the same as this (A B 3). Here the two characters at the right are placed one above the other and appear to be Imix symbols, and the head that of a monkey. There are also some small additions not found in the other, but allowance must be made for the fact that the characters on this statue are not so carefully drawn as those on the Tablet.

The next character below (A B 4), if we follow the rendering of the first, will contain the sound *p' ch-c*, and A B 5 that of *p' x*. The next (A B 6) I think is the symbol for Chuen or contains the sound *chu* A B 7, I am inclined to believe, is the symbol for *likin* or *lakin*, "east" or "rising sun."

A 10 refers to a vessel of some kind, as I infer from the vase symbol at the bottom. C 13 probably represents a word or words with the sounds *ca-z'* or *z'-ca*. Although F 2 has a central mark somewhat resembling that in Ik, I strongly suspect it to be the symbol for the month *Muan*.

In R 1 we see the bread symbol precisely as on the back of the dog, Plate XXI, and in the middle division, Plate III*, of the Tro. Manuscript.

E 6, U 4, V 14, and X 12 probably denote tortillas of maize (*ppecuah*).

I shall not attempt an explanation of the central scene, but will call attention to a few points in reference to it.

Crosses of some form with birds on them are found in three or four of the aboriginal manuscripts, as Plate III* of the Manuscript Troano, Plate 30 of the Dresden Codex, and in one or two of the Mexican Codices. It is true none of them are so regular or so true as this, but they are evidently intended as representations of the cross and to symbolize the same general idea. Certain characteristics belong to all of them, as follows: First, they arise out of something that has life, as an animal or person; second, a vegetable growth therefrom, as a tree; third, the knobs at the ends of the arms,

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possibly indicating stars as emblematic of the heavens; and, fourth, the bird at the top. In this (the Palanque Tablet) we see at the base the head of some fabulous reptile, notwithstanding the opinion quoted in Dr. Rau's paper to the contrary. The appendages at the right and left just above the head are probably intended for fore limbs. By looking carefully at the upright we observe little knots on the sides opposite each other, indicating the nodes as marked on the figures of trees in the Manuscript.

Referring to the middle plate between pages 156 and 157, Stephens's Central America, Vol. I, we observe on the back of the statue an abridged type of the Palenque cross. Here we see the same broad nose, the rows of teeth, and the spiral lines representing eyes, but we would never imagine it represented a head but for what we see on the Palanque Tablet.

The arms issue from the upper portion of the head; the knobs are represented by balls along the arms without stems; and the bird is changed into a human figure with wings and a little bird head.

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APPENDICES.

APPENDIX NO. 1.

Extracts from the "Relacion de Cosas de Yucatan" of Diego de Landa, in relation to the festivals of the supplementary or closing days of the year. §§ XXXV–XXXVII (*pp.* 210–226).

En qualquiera fiesta o solemnidad que esta gente hazian a sus dioses, començavan siempre del echar de si al demonio para mejor la hazer. Y el echarle unas vezes eran con oraciones y bendiciones que para ello tenian, otras con servicios y offrendas y sacrificios que le hazian por esta razon. Para celebrar la solemnidad de su año nuevo esta gente con mas regocijo y mas dignamente, segun su desventurada opinion, tomavan los cinco dias aciagos que ellos tenian por tales antes del primero dia de su año nuevo y en ellos hazian muy grandes servicios a los *Bacabes* de arriba y al demonio que llamavan por otros quatro nombres como a ellos, es a saber *Kan-u-Uayeyab*, *Chac-u-Uayeyab*, *Zac-u-Uayeyab*, *Ek-u-Uayeyab*. Y estos servicios y fiestas acabadas y alançado de si, como veremos, el demonio, començavan su año nuevo.

§ XXXV.—*Fiestas de los dias aciagos. Sacrificios del principio del año nuevo en la letra de Kan.*

Uso era en todos los pueblos de Yucatan tener hecho dos montones de piedra uno en frente de otro, á la entrada del pueblo, por todas las quatro partes del pueblo, es a saber a oriente, poniente, septentrion y medio dia, para la celebracion de las dos fiestas de los dias aciagos los quales hazian desta manera cada año.

El año que la letra dominical era de *Kan* era el aguerō *Hobnil*, y segun

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ellos dezian, reynavan ambos a la parte del medio dia. Este año pues hazian una imagen o figura hueca de barro del demonio que llamavan *Kan-u-Uayeyab*, y llevavanla a los montones de piedra seca que tenian hechos a la parte de medio dia. Elegian un principe del pueblo, en cuya casa se celebrava estos dias esta fieste, y para celebrarla hazian una estatua de un demonio que llamavan *Bolon-Zacab*, al qual ponian en casa del principal, adereçado en un lugar publico y que todos pudiessen llegar.

Esto hecho se juntavan los señores y el sacerdote y el pueblo de los hombres, y teniendo limpio y con arcos y frescuras adereçado el camino hasta el lugar de los montones de piedra donde estava la estatua, ivan todos juntos por ella con mucha de su devocion: llegados la sahumava el sacerdote con quarenta y nueve granos de maiz molidos con su encienso y ellos lo repartian en el brasero del demonio y le suamavan. Llamavan al maiz molido solo *zacah*, y a lo de los señores *chahalté*. Sahumavan la imagen, degollavan una gallina y se la presentavan o offrecian.

Esto hecho metian la imagen en un palo llamado *Kanté* y punendole acuestas un angel en señal de agua y que este año avia de ser bueno, y estos angeles pintavin y hazian espantables; y assi la llevavan con mucho regocijo y vailes a la casa del principal donde estava la otra estatua de *Bolonzacab*. Sacavan de casa deste principal a los señores y al sacerdote al camino una bevida hecha de CCCC y XV granos de maiz tostados que llaman *Picula Kakla* y bevian todos della; llegados a la casa del principal, ponian esta imagen en frente de la estatua del demonio que alli tenian, y assi le hazian muchas offrendas de comidas bevidas de carne y pescado, y estas offrendas repartian a los estrangeros que alli se hallavan y davan al sacerdote una pierna de venado.

Otros derramavan sangre, cortandose las orejas, y untando con ella una piedra que alli tenian de un demonio *Kanal-Acantun*. Hazian un corazon de pan, y otro pan con pepitas de calabaças y offrecianlos a la imagen del demonio *Kan-u-Uayeyab*. Tenianse assi esta estatua y imagen estos dias aciagos, y sahumavanla con su encienso y con los maizes molidos con encienso. Tenian creido si no hazian estas cerimonias avian de tener ciertas enfermedades que ellos tienen en este año. Passados estos dias aciagos llevavan la estatua del demonio *Bolonzacab* al templo y la imagen a

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la parte del oriente para ir alli otro año por ella, y echavan la ay, y ivanse a sus casas a entender en lo que les dava a cada uno que hazer para la celebracion del año nuevo.

Dexando con las cerimonias hechas, echado el demonio, segun su engaño, este año tenian por bueno, porque reynava con la letra *Kan* el *Bacab-Hobnil*, del qual dezian no avia peccado como sus hermanos y por esso no les venian miserias en el. Pero porque muchas verzes las avia, proveyo el demonio de que le hiziessen servicios paraque assi quando las uviesse, hechassen la culpa a los servicios o servidores y quedassen siempre engañados y ciegos.

Mandavales pues hiziessen un idolo que llamavan *Yzamna-Kauil* y que la pusiessen en su templo, y que le quemassen en el patio del templo tres pelotas de una leche o resina que llaman *kik* y que le sacrificassen un perro o un hombre, lo qual ellos hazian, guardando la orden que en el capitulo ciento dixe, tenian con los que sacrificavan, salvo que el modo de sacrificar en esta fiesta era diferente, porque hazian en el patio del templo un gran monton de piedras y ponian el hombre o perro que avian de sacrificar, en alguna cosa mas alta que el, y echando atado al patiente de lo alto a las piedras le arrebatavan aquellos officiales y con gran presteza le sacavan el corazon y lo llevavan al nuevo idolo y se le ofrecian entre dos platos. Ofrecian otros dones de comidas y en esta fiesta vailavan las viejas del pueblo que para esto tenian elegidas, vestidas de ciertas vestiduras. Dezian que descendia un angel y recibia este sacrificio.

§ XXXVI.—*Sacrificios del año nuevo de la letra Muluc. Bailes de los Zancos Otro de las viejas con perros de barro.*

El año en que la letra dominical era Muluc era el aguero *Canzienal.* Y a su tiempo elegian los señores y el sacerdote un principal para hazer la fiesta, el qual elegido hazian la imagen del demonio como la del año passado, a la qual llamavan *Chac-u-Uayeyab* y llevavanla a los montones de piedra de hazia la parte del oriente donde avian echado la passada. Hazian una estatua al demonio llamado *Kinch-Ahau*, y ponianla en casa del principal en lugar conveniente y desde alli, teniendo muy limpio y adereçado el camino,

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ivan todos juntos con su acostumbrada devocion por la imagen del demonio *Chac-u-Uayeyab.*

Llegados la sahumava el sacerdote con LIII granos de maiz molidos y con su encienso, a lo qual llaman *zacah.* Dava el sacerdote a los señores que pusiessen en el brasero mas encienso de lo que llamamos *chahalté*, y despues degollavanle la gallina, como al passado, y tomando la imagen en un palo llamado *Chacté*, la llevavan accompañadola todos con devocion y vailando unos vailes de guerra que llaman *Holcan-Okot, Batel-Okot.* Sacavan al camino a los señores y principales su bevida de CCC y LXXX maizes tostados como la de atras.

Llegados a casa del principal ponian esta imagen en frente de la estatua de *Kinch-Ahau* y hazianle todas sus ofrendas, las quales repartian como las demas. Ofrecian a la imagen pan hecho como yemas de uevos, y otros como coraçones de venados, y otro hecho con su pimienta desleida. Avia muchos que derramavan sangre, cortandose las orejas, y untando con la sangre la piedra que alli tenian del demonio que llamavan *Chacan-cantun.* Aqui tomavan mochachos y les sacavan sangre por fuerça de las orejas, dandoles en ellas cuchilladas. Tenian esta estatua y imagen hasta passados los dias aciagos, y entre tanto quemavanle sus enciensos. Passados los dias, llevavan la imagen a echar a la parte del norte por ay donde otro año la avian de salir a recibir, y la otra al templo, y despues ivanse a sus casas a entender en el aparejo de su año nuevo. Avion de temer, si no hazian, las cosas dichas, mucho mal de ojositos.

Este año en que la letra *Muluc* era dominical y el *Bacab Canziemal* reynava, tenian por buen año, ca dezian que era este el mejor y mayor destos dioses *Bacabes;* y ansi le ponian en sus oraciones el primero. Pero con todo eso, les hazia el demonio hiziessen un idolo llamado *Yax-coc-Ahmut*, y que lo pusiessen en el templo y quitassen las imagenes antiguas, y hiziessen en el patio de delante del templo un bulto de piedra en el qual quemassen de su encienso, y una pelota de la resina o leche *kik*, haziendo alli oracion al idolo, y pidiendole remedio para las miserias que aquel año tenian; las quales eran poca agua, y echar los maizes muchos hijos y cosas desta manera; para cuyo remedio, les mandava el demonio ofrecerle hardillas y un

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paramento sin labores; el qual texessen las viejas que tienen por officio el bailar en el templo para aplacar a *Yax-Coc-Ahmut.*

Tenian otras muchas miserias y malos señales, aunque era bueno el año, sino hazian los servicios que el demonio les mandava; lo qual era hazer una fiesta y en ella vailar un vaile en muy altos zancos y ofrecerle cabeças de pavos y pan y bevidas de maiz; avian de ofrescerle perros hechos de barro con pan en las espaldas y avian de vailar con ellos en las manos las viejas y sacrificarle un perrito que tuviesse las espanaldas negras y fuesse virgen, y los devotos dellos avian de derramar su sangre y untar la piedra de *Chaca-cantun* demonio con ella. Este servicio y sacrificio tenian por agradable a su dios *Yax-Coc-Ahmut.*

§ XXXVII.—*Sacrificios del año nuevo de la letra Yx. Pronosticos malos y modo de remediar sus efectos.*

El año en que la letra dominical era Yx y el aguero *Zacciui*, hecha la eleccion del principal que celebrasse la fiesta, hazian la imagen del demoniol llamado *Zac-u-Uayeyab* y llevavanla a los montones de piedra de la parte del norte, donde el año passado la avian echado Hazian una estatua a, demonio *Yzamna* y ponianla en casa del principal, y todos juntos, y el camino aderaçado, ivan devotamente por la imagen de *Zac-u-Uayeyab.* Llegados la sahumavan como lo solian hazer, y degollovan la gallina y puesta la imagen en un palo llamado *Zachia*, la tryan con su devocion y bailes los quales llaman *Alcabtan-Kamahau.* Traian les la bevida acostumbrada al camino y llegados a casa ponian esta imagen delante la estatua de *Yzamna* y alli le offrecian todas sus offrendas, y las repartian, y a la estatua de *Zac-u-Uayeyab* ofrescian una cabeça de un pavo, y empanados de codornices y otras cosas y su bevida.

Otros se sacavan sangre y untavan con ella la piedra del demonio *Zac-Acantun* y tenianse assi los idolos los dias que avia hasta el año nuevo, y saumavanlos con sus saumerios hasta que llegado el dia postrero llevavan a *Yzamna* al templo y a *Zac-u-Uayeyab* a la parte del poniente a echarle por a y para recibirla otro año.

Las miserias que tenian este año si eran negligentes en estos sus servicios eran desmayos y amortecimientos y mal de ojas. Tenianle por ruyn

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año de pan, y bueno de algodon. Este año en que la letra dominical era *Yx*, y el *Bacab Zacciui* reynava, tenian por ruyn año, porque dezian avian de tener en el miserias muchas ca dezian avian de tener gran falta de agua, y muchos soles, los quales avian de secar los maizales, de que se les seguiria gran hambre, y de la hambra hurtos, de hurtos esclavos, y vender a los que los hiziessen. Desto se les avian de seguir discordias y guerras entre si propios o con otros pueblos. Dezian tambien avia de aver mudança en el mando de los senores o de los sacerdotes, por razon de las guerras y discordias.

Tenian tambien un pronostico de que alguños de los que quisiessen ser señores no prevalescerian. Dezian ternian tambien langosta, y que se despoblarian muchos de sus pueblos de hambre. Lo que el demonio les mandava hazer para remedio destas miserias las quales todas o algunas dellas entendian les vernian era hazer un idolo que llamavan *Cinch-Ahau Yzamna*, y ponerle en el templo, donde le hazian muchos saumerios y muchas ofrendas y oraciones y derramamientos de su sangre, con la qual untavan la piedra de *Zac-Acantun* demonio. Hazian muchos vailes y vailavan las viejas como solian, y en esta fiesta hazian de nuevo un oratorio pequeño al demonio, o le renovavan, y en el se juntavan a hazer sacrificios y offrendas al demonio, y a hazer una solemne borachera todos; ca era fiesta general y obligatoria. Avia algunos santones que de su voluntad, y por su devocion hazian otro idolo como el de arriba y le ponian en otros templos, donde se hazian ofrendas y borachera. Estas boracheras y sacrificios tenian por muy gratos a sus idolos, y por remedios para librarse de las miserias del pronostico.

§ XXXVIII.—*Sacrificios del año nuevo en la letra Cauac Pronosticos malos y su remedio en el baile del fuego.*

El año que la letra dominical era *Cauac* y el aguero *Hozanek*, hecha la elecion del principal, para celebrar la fiesta hazian la imagen del demonio llamado *Ekuvayeyab*, y llevavanla a los montones de piedra de la parte del poniente, donde el año passado la avian echado. Hazian tambien una estatua a un demonio llamado *Uacmitun-Ahau*, y ponianla en casa del principal en lugar conveniente, y desde alli ivan todos juntos al lugar donde la imagen de *Ekuvayeyab* estava, y tenian el camino para ello muy adereçado; llegados

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a ella saumavanla el sacerdote y los señores, como solian y degollavanle la gallina. Esto hecho, tomavan la imagen en un palo que llamavan *Yaxek*, y ponianle acuestas a la imagen una calabera y un hombre muerto y en cima un paxaro cenicero llamado *kuch*, en señal de mortandad grande, ca por muy mal año tenian este.

Llevavanla despues desta manera, con su sentimiento y devocion, y bailando algunos vailes, entre los quales vailavan uno como cazcarientas y assi le llamavan ellos *Xibalba-Okot*, que quiere dezir baile del demonio Llegavan al camino los escancianos con la bevida de los señores, la qual bevida llevavan al lugar de la estatua *Uacmitun-Ahau*, y poniale alli en frente la imagen que traian. Luego començavan sus ofrendas, saumerios y oraciones, y muchos derramavan la sangre de muchas partes de su cuerpo, y con ella untavan la piedra del demonio llamado Ekel-Acantun, y assi passavan estos dias aciagos, los quales passados, llevavan a *Uacmitun-Ahau* al templo, y a *Ekuvayeyab* a la parte de medio dia, para recibirla otro año.

Este año en que la letra era *Cauac* y reynava el *Bacab-Hozanek* tenian, allende de la pronosticada mortandad, por ruyn, por que dezian les avian los muchos soles de matar los maizales, y comer las muchas hormigas lo que sembrassen y los paxaros, y porque esto no seria en todas partes avria en algunos comida, la qual avrian con gran trabajo. Haziales el demonio para remedio destas meserias hazer quatro demonios llamados *Chicchac-Chob*, *Ek-Balam-Chac*, *Achan-Uolcab*, *Ahbuluc-Balam*, y ponerlos en el templo donde los suamavan con sus saumerios, y les ofrecian dos pellas de una leche o resina de un arbol que llaman *kik*, para quemar y ciertas iguanas y pan y una mitra y un manojo de flores; y una piedra preciosa de las suyas. Demas desto, para le celebracion desta fiesta, hazian en el patio una grande boveda de madera, y henchianla de leña por lo alto y por los lados, dexandole en ellos puertas para poder entrar y salir. Tomavan despues los mas hombres de hecho sendos manojos de unas varillas muy secas y largas atadas, y puesto en lo alto de la leña un cantor, cantava y hazia son con un atambor de los suyos, vailavan los de abaxo todos con mucho concierto y devocion, entrando y saliendo por las puertas de aquella boveda de madera, y assi vailavan hasta la tarde, que dexando alli cada uno su manojo, se ivan a sus casas a descansar y comer.

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En anocheciendo volvian y con ellos mucha gente, porque entre ellos esta cerimonia era muy estimada y tomando cada uno su hacho lo encendian y con ellos cada uno por su parte pegavan fuego a la leña la qual ardia mucho y se quemava presto. Despues de hecho toda braza, la allanavan y tendian muy tendida y juntos los que avian bailado, avia algunos, que se ponian a passar descalços y desnudos como ellos andavan por encima de aquella braza de una parte a otra y passavan algunos sin lesion, otros abraçados, y otros medio quemados, y en esto creian estava el remedio de sus miserias y malos agueros, y pensavan era este su servicio muy agradable a sus dioses. Esto hecho se ivan a bever y hazerse cestos, ca assi lo pedia la costumbre de la fiesta, y el calor del fuego.

APPENDIX NO. 2.

[Quotation from an article by Señor Melgar.]

"In the third volume and the first MSS. in this volume, now in the Borgian Museum in the College of Propaganda at Rome, page 43, will clearly be seen the four stations of the year. On the right hand of upper side we see a genius or being, from whose mouth a flower proceeds, and joined to the left foot there is the sign of the Hare, whose appearance represents the season of rutting, the above-said, being a genius, fecundates the frog—a symbol of the earth among the Toltecs and Aztecs. It is coiled up within a serpent or dragon, undoubtedly Serapis, and from its rings come forth innumerable Phalli. From this proceeds the Cosmogonic idea of the union of Uranus and Gea, which is the Spring Equinox. Below this (in the MSS.) is another sketch representing the summer solstice. The painted figure is that of a negro, and the hare at its left foot has its mouth open, panting with the heat; behind it are fruits and flowers, and also are seen the folds of the aforesaid serpent. The sketch which follows this one shows on the left the Autumnal Equinox. The figure is extended over a cross, the hare which comes forth from its ear is afflicted with pustules or pox. Under this figure is a skull likewise in the folds of the serpent before mentioned.

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In the last picture, which is on the upper left hand, is the Winter Solstice. From the ear of the figure comes forth a snake or the evil genius; from its mouth proceeds the sign for earthquake, likewise inclosed in the folds of a great serpent; and in all the pictures there is the eagle, the next constellation to Serpentarius."

APPENDIX NO. 3.

Translation of Landa's description of the festivals held in the different months of the year.[1]

NOTE.—The order of the translation is in accordance with the months of the Maya year, commencing with *Pop* instead of with the 10th day of Chen. The different months are here numbered by the letters of the alphabet.

COMMENCEMENT OF THE MAYA YEAR—FIRST DAY OF THE MONTH *POP*.

A.—The first day of *Pop* commenced the first month of these Indians; it was the first day of their new year and of a very solemn feast with them; for it was general, all took part in it and all the people assembled to feast in honor of their gods. In order to celebrate it with greater ostentation, they renewed on this day the articles which they made use of, such as dishes, cups, pedestals, baskets, old cloths, and stuffs with which they covered their idols. They swept their houses and threw all the dirt and old utensils into the highway without the place, and nobody, had they the greatest need of it, dared to touch it. In order to prepare themselves for this feast, the princes and priests, also the nobility, commenced to fast and previously to abstain from their wives; this included also those who wished to show their devotion, and they gave to it all the time they thought proper; there were some who fasted three months in advance, others two, and others, according to their fancy, as long as it pleased them, but never less than thirteen days.

To these thirteen days of abstinence from their wives, they added that

[1] Relacion, pp. 240–310.

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of taking neither salt nor spice with their meat, which they regarded as a great privation. At this time they elected the officers (*Chacs*) who assisted the priests; he prepared for them a large quantity of little balls of incense on small boards, which the priests kept for this purpose in order that those who had fasted should burn them before their idols. Those who had once commenced this fast took great care not to break it, believing that, if they did, some misfortune would fall on them or their houses on account of that violation.

The first day of the new year having arrived, all the men assembled in the court of the temple, but men alone; for, on any occasion, if the feast or sacrifice was celebrated in the temple, the women were not allowed to assist in it, with the exception of the old women who came to dance; but at the other banquets, which were held in other places, the women were allowed to be present. On this occasion the men came ornamented and painted with their colors, after having washed from themselves the grease with which they were covered during their fast. All being assembled with the offerings of meat and drinks which they had brought, also a great quantity of wine, newly fermented, the priest purified the temple and seated himself in the center of the court, clothed in pontifical garments and having beside him a brazier and the balls of incense. The *Chacs* took their places at the four corners, extending from one to the other a new cord, beneath the center of which all those must enter who had fasted, in order to dispel the evil spirit spoken of in Chapter XCVI.

The evil spirit once driven out, all devoted themselves to prayer while the *chaces* (sic) kindled the new fire; they burnt the incense before the idols, the priest commencing by casting his own ball into the brazier; the rest followed, each according to his rank, to receive the balls from the hand of the priest, who gave them with much gravity and devoutness, as if he was giving them valuable relics; then one after the other cast them slowly into the brazier, waiting until it was consumed.

After this ceremony they feasted upon all the offerings and presents of food, drinking the wine after their custom, as usual, until they had consumed it all. This was their feast of the new year, and the solemnity with which they believed themselves to render it perfectly agreeable to their

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idols. During the month Pop, there were also some of the most devout men who continued to celebrate this feast with their friends, such as the nobles and priests, they being, before others, always the first in the rejoicings and festivities.

B.—During the month *Uo*, the priests, the medicine-men, and the sorcerers, which were all the same, commenced, by fasting and other acts of piety, to prepare for the celebration of another feast which the hunters and fishermen celebrated on the seventh day of the month *Zip*; each of them celebrated it on his own day on his part, the priests being the first. They gave to this feast the name of *Pocam*. Having assembled, covered with their ornaments, at the house of the chief, they first dispelled the evil spirits as before; they then uncovered their books and laid them open on a carpet of leaves which they had prepared for this purpose. They then invoked with great devotion a god called *Cinchau-Yzamna*, who had, they said, been the first priest; they offered him divers presents and burnt before him in the new fire some balls of incense. During this time others diluted in a vessel a little verdigris and pure water, which they said was brought from a wood in which no woman had ever penetrated; they moistened with it the leaves of their books in order to cleanse them; this finished, the most learned of the priests opened a book in which he examined the omens of the year, which he announced to all those who were present. He then talked to them for a short time, advising them as to what they should do to prevent these evil things, and announced the same feast for the next year to the priest or noble who was to celebrate it; if he should die in the mean time, it devolved upon his son to celebrate it in his place. When this was concluded, all feasted together upon the food and offerings of drinks, drinking like wine-bibbers. Thus was completed the feast, during which they executed a dance called *Okot-Uil*.

C.—The following day, the medicine-men and sorcerers assembled with their wives at the house of one of their number. The priests expelled the evil spirit; after which they opened their medicine-bags, in which they kept a number of charms, and, each in particular, some little images of the goddess of medicine, which they called *Ixchel*, whence the name of the fes-

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tival, *Ihcil-Ixchel;* also some little stones used in their sorceries, called *am.* Then they invoked in their prayers, with great devotion, the gods of medicine, *Yzamna, Cit-Bolon-Tun,* and *Ahau-Chamahcz,* while the priests burned in their honor the incense which they cast into the brazier of the new fire, and which the *Chacs* smeared with a blue color resembling the color of the books of the priests. This done, each one gathered up his valuables, and, loaded with their bundles, they executed a dance called *Chan-tun-yab.* The dance having terminated, the men seated themselves on one side and the women on the other; they then arranged the day for the feast of the next year, and all made the usual banquet on the offerings and drinks, intoxicating themselves, trying each to exceed the other. The priests alone, it is said, ashamed of joining with them on this occasion, put aside their share of the wine, in order to drink it at their ease and without any witnesses.

The preceding day the hunters gathered together at one of their houses, where they brought their wives with them; the priests came also, and after having driven away the evil spirit, as usual, they placed in the center of the house the preparatives necessary to the sacrifice of incense and the new fire, with the blue color. The hunters worshiped with devotion the gods of the chase, *Acanum, Zu-huy-Zip, Tabai,* and others, and distributed the incense, which they then threw into the brazier. While they were burning, each one took an arrow and a deer's head, which the *Chacs* had painted blue; and thus adorned some danced, holding each other's hand, while others pierced their ears or tongue, passing through the holes which they made in them seven leaves of an herb called *Ac.* This completed, first the priests, and afterward the officers of the feast, presented the offerings, then they began to dance, drinking wine until they were intoxicated.

The next day it was the fishermen's turn to celebrate the feast, which they did in the same manner as the others, except that in place of the deer heads, they painted their fishing implements; they did not pierce their ears, but cut around them, after which they performed a dance called *Chohom.* After this, they consecrated a large tree, which they left standing upright.

When this feast was finished in the cities, it was the custom of the nobles to celebrate it with a large crowd at the sea-shore, where they held a great fishing expedition with rejoicings of every kind; for they carried

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with them a large quantity of lines and fish-hooks with other implements for fishing. The gods whom they then invoked as their patrons were *Ahkak-Nexoi*, *Ahpua*, *Ahcitz*, and *Amalcum*.

D.—During the month of *Tzoz* the apiarists prepared for the celebration of their feast of *Tzec*; but although the principal preparation was fasting, only the priests and the officers who were to assist him were compelled to fast, all the rest being voluntary.

E.—The month *Tzec*. The day of the feast having arrived, they congregated at the house of him who celebrated it, and performed all that they usually did at the other feasts, except that they shed no blood. Their patrons were the *Bacabs*, and especially *Hobnil*. They then made great offerings, particularly to the four *Chacs*, to whom they presented four plates covered with figures of honey, in order to obtain it in abundance by means of this feast. They finished, as usual, with a perfect orgy, the apiarists being by no means sparing of their honey on this occasion.

F.—The month *Xul*. It has been seen in the tenth chapter how, after the departure of Kukulcan from Yucatan, there were some Indians who, believing that he was carried to heaven with the gods, regarded him as a god and built temples in his honor and celebrated feasts, which they continued throughout the country until the destruction of Mayapan. After this event, they celebrated them no longer except in the province of Mani; but the other provinces, in recognition of what they owed to Kukulcan, presented to Mani by turns each year, sometimes four and at other times five magnificent banners of feathers, with which they solemnized the feasts, not like the others, but in the following manner:

On the sixteenth day of the month of *Xul* all the lords and priests of Mani assembled, and with them a large crowd, who joined with them, after having prepared for it by fast and penances. On the evening of this day they departed in procession, with a large number of performers, from the house of the prince and advanced slowly towards the temple of *Kukulcan*, which they had previously ornamented. Having arrived, they repeated their prayers and placed the banners high in the temple; they exposed their idols on a carpet of leaves. Having then built the new fire, they burnt

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incense in many places, making offerings of meat, cooked without pepper or salt, and drinks made from beans and kernels of calabashes. The lords, and also those who had observed the fast, passed five days and five nights there without returning home—praying, burning copal, and executing sacred dances. During this time the actors went to the houses of the nobles and others, exhibiting their performances and receiving the gifts which were offered to them. At the end of the five days they carried them all to the temple, where they divided them among the priests and the dancers. After this they resumed the banners and idols, which they carried back to the mansion of the prince, from which place each one returned home with whatever he recovered. They said, and devoutly believed, that Kukulcan descended from heaven in person on the last day of the feast and received the sacrifice, the presents, and offerings which they made to him. They called this feast *Chic-Kaban.*

G.—The month *Yaxkin.* During this month they commenced to prepare, as was their custom, for a general feast, which was celebrated in *Mol*, on a day designated by the priest in honor of all the gods; they called it *Oloh-Zab-Kam Yax.* After the usual ceremonies and incensing which they desired to do, they smeared with their blue paint all the instruments of every profession, from those used by the priests even to the spindles of the women and the doors of their houses. On this occasion they painted the children of both sexes with the same color; but, instead of smearing their hands, they gave them each nine gentle raps on their knuckles, that they might be skillful in the professions of their fathers and mothers. As for the little girls, an old woman brought them there, and for this reason they called her Ixmol, that is to say, conductress. The conclusion of this ceremony was a grand orgy and banquet with the offerings which they had presented, although it was understood that the devoted old woman was not permitted to become intoxicated, lest she should lose on the road the plume of her office.

H.—The month *Mol.* During this month the apiarists repeated the feast which they had celebrated in the month *Tzec*, in order that the gods might cause the flowers to grow for the bees.

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One of the things that these wretched people regarded as the most difficult and arduous was the fabrication of their idols of wood, which they called *making the gods*. They had for this a particular time, which was this month of *Mol*, or any other if the priest judged it proper to change it.

Those who wished to have it done consulted first the priest, and after his advice went to seek the artists who occupied themselves with this profession; but, to whatever they said, these artists always excused themselves, because they were persuaded that one or another of their house might die, or that it would suddenly bring upon them some disease of the heart. When they had accepted, the *Chacs* whom they chose for this purpose, also the priest and the artist, commenced to fast. In the mean time those who had ordered the idols went in person or sent a trusty person into the wood to cut down the tree of which they must be sculptured, and which was always cedar. When the wood was obtained they built a cabin of stubble well closed, where they put the wood, with a large urn for inclosing the idols during the time that they worked on them. They offered incense to four gods, called *Acantun*, the images of which they placed at the four cardinal points; they took also that which they used for scarifying their ears and drawing blood from them, and also the instruments which they needed for sculpturing their black divinities. Prepared in this manner, the priest, the *Chacs*, and the artist shut themselves up in the hut and commenced the sacred work, frequently cutting themselves, and smearing the idols with their blood, and burning incense before them. They continued thus until the work was finished, the members of their families carrying food to them with whetever was necessary to them; but they could not during this time approach their wives, and no one was admitted into the place where they were incarcerated.

I.—Month *Chen*. According to what they said, they worked in great fear while sculpturing the gods. As soon as the idols were completed and perfected, those who owned them gave to those who had made them the most valuable presents possible, of birds, of venison, and of money, in order to pay them for their work. They took the idols from the cabin where they had been made and carried them into another cabin made of leaves, erected

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for this purpose in the court, where the priest consecrated them with much solemnity and fervent prayers, the artists having previously washed themselves from the soot with which they were covered as a sign of fasting, they said, for all the time that they were at work. Having accordingly driven away the evil spirit and burnt the consecrated incense, they placed the new images in a flat basket, wrapped in linen, and carried them back to their owner, who received them with much devotion.

The priest then addressed the artists for some time on the excellence of their profession, that of making the new gods, and on the danger they incurred by working without regarding the rules of abstinence and fasting. After this, they partook together of an abundant repast and drank more freely than usual.

K.—The month *Yax*. In one of the two months *Chen* and *Yax*, whichever was selected by the priest, they celebrated a feast called *Ocna*, which means the renovation of the temple in honor of the *Chacs*, whom they regarded as the gods of the fields. In this feast they consulted the prognostics of the *Bacabs*, which is spoken of more at length in chapters CXIII, CXIV, CXV, and CXVI, and after the manner already mentioned. This feast was celebrated every year. Besides, they renovated the idols of baked earth and their braziers; for it was the custom that each idol should have its little brazier, in which was burned their incense, and, if it was found necessary, they built a new house or repaired the old one, taking care to place on the wall an inscription commemorating these things, written in their characters.

L.—The month *Zac*. On one of the days of the month *Zac*, designated by the priest, the hunters celebrated another feast similar to that which they had celebrated in the month *Zip*. This took place at this time for the purpose of appeasing the anger of the gods against themselves and their descendants, on account of the blood they had shed during the chase; for they regarded as abominable all shedding of blood except in their sacrifices; also they never went to hunt without first invoking their idols and burning incense before them; and if they afterwards succeeded, they smeared their faces with the blood of their game.

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On another day, which came on the seventh Ahau, they celebrated a very grand festival, which continued for three days, with incense-burning, offerings, and a very respectable orgy; but as it was a movable feast the priest took care to publish it in advance, in order that each one might keep a fast according to his duty.

M.—The month *Mac.* On another day in the month of *Mac*, the old people, and especially the old men, celebrated a feast in honor of the *Chacs*, the gods of abundance, and also to *Yzamna.* Some days before, they performed the following ceremony, called in their language *Tuppkak.* Having gathered together all the animals, such as reptiles and beasts of the fields which they could find in the country, they assembled in the court of the temple, the *Chacs*, and the priests placing themselves in the corners in order to expel the evil spirit, according to the custom, each of them having beside him a pitcher filled with water, which was brought to him. Standing upright, in the center, was an enormous bundle of small dry wood, with which they kindled a fire after having thrown the incense into the brazier; while the wood was burning, they tore out, with emulation, the hearts of the animals and birds and cast them into the fire. If it had been impossible to obtain large animals, such as tigers, lions, and alligators, they represented the hearts of these by incense; but if they had them, they tore out their hearts also and put them in the fire. As soon as all the hearts were consumed, the *Chacs* extinguished the fire with the water in the pitcher.

The object of this sacrifice and of the feast following was, also, to obtain an abundance of water for their crops during the year. They celebrated this feast, however, in a different manner from the others; for in this they did not fast, with the exception of the beadle of the confraternity, who performed penance. On the day fixed upon for the celebration, all the people assembled with the priest and the officers in the court of the temple, where they had erected a stone platform, with steps for mounting, suitably ornamented with leaves. The priest gave the incense, previously prepared, to the beadle who burned in the brazier enough of it to dispel the evil spirit. This done, with the accustomed devotion, they smeared the first step of the platform with mire from a well or cistern, and the others

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with the blue color; they incensed it several times and invoked the *Chacs* with prayers and ceremonies, offering them many gifts. At the close, they rejoiced, eating and drinking the oblations, full of confidence in the result of their invocations for this year.

N.—The month *Muan*. During the month *Muan* the proprietors of the cacao plantations celebrated a feast in honor of the gods *Ekchuah*, *Chac*, and *Hobnil*, who were their patrons. In order to solemnize it, they went to the farm of one of their number, where they sacrificed a dog, bearing a spot of the color of cacao. They burnt incense before their idols, offering them iguanas—those which were of a blue color; feathers of a particular bird; also different kinds of game. They gave to each one of the officers a branch with the fruit of the cacao. The sacrifice completed, they set themselves to eating and drinking the offerings; but it is said that they permitted each one to drink only three cups of their wine, and they could bring only the necessary quantity. They then returned to the house of the one who bore the expenses of the feast, where they entertained themselves together.

O.—The month *Pax*. In the month *Pax* they celebrated a feast called *Pacum-Chac*, on which occasion the nobles and priests of the inferior boroughs assembled with those from the more important villages. Thus united they passed five nights in prayer in the temple of *Cit-Chac-Coh*, presenting their sacrifices with incense, as has been seen at the feast of *Kukulcan* in the month of Xul, in November. In commencing these five days, they returned together to the house of the general of their armies, whose title was *Nacon*, of which I have spoken in Chapter CI. They bore him in great pomp to the temple, burning incense before him like an idol, where they seated him. Thus they passed the five days, eating and drinking the offerings which they had presented in the temple, and executing a dance similar to a war dance, to which they gave, in their language, the name of *Holkan-Okot*, which means the dance of the warriors When the five days were passed everybody came to the feast, which, as it concerned the affairs of war and hope of obtaining the victory, was very solemn.

It was commenced with the ceremonies and sacrifices of fire, of which I have spoken in the festival in the month of *Mac*. Then they expel the evil spirit, as usual, which is done with much solemnity. This finished,

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they recommenced their prayers, sacrifices, and incensing. While all these things were going on the nobles and those who had accompanied them replaced the *Nacon* on their shoulders and carried him in procession around the temple. On their return the *Chacs* sacrificed a dog, tearing out its heart, which they presented to the idol, between two plates; each one present then broke in pieces a large vessel filled with a drink, with which the feast was completed. All then ate and drank the offerings which they had brought, and, with much solemnity, but without the usual incense, carried the *Nacon* back to his home.

There a grand banquet took place, at which the lords, nobles, and priests became intoxicated in the effort to excel each other in drinking, with the exception of the *Nacon*, who remained sober, the crowd in the mean time returning to their homes. The next day, after they had slept themselves sober, the nobles and priests, who had remained at the mansion of the general after the orgy, received from his hand large presents of incense which he had prepared for this purpose and caused to be consecrated by the holy priests.

At this reunion he addressed them in a long discourse, and earnestly recommended to them the feasts which they should celebrate in honor of the gods, in their towns, in order to obtain a prosperous and abundant year. When the lecture was finished all took leave of each other with much affection and noise, and each one took the road for his village and home.

There they occupied themselves with the celebration of their feasts, which sometimes lasted, according to circumstances, until the month of *Pop*. They gave to these feasts the name of *Zabacil-Than*, and they were celebrated in the following manner: They sought in the commune those who, being the richest, were the most able to bear the expense of the feast, and requested them to fix upon a day, because they had more of . . . . . during these three months which remained until the natural year. What they then did was to assemble at the mansion of the one who celebrated the feast, after having performed the ceremony of dispelling the evil spirit. They burnt copal and presented offerings with rejoicings and dances, after which they drank some wine, which last was always the main point of the feast. Such were the excesses in which they indulged themselves during

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these three months, which it was painful to see; some departing covered with wounds or bruises, others with their eyes inflamed with the quantity of liquor which they had imbibed, and with this passion for drink they ruined themselves entirely.

P.—It has been said, in the preceding chapters, that the Indians commenced their years with days without names, preparing in the villages for the celebration of the feast of the new year. Besides the feast which they made to the god *U-uayeyab*, by right of which alone they went out from home, they solemnized especially these five days, seldom quitting their houses, except to present, besides the offerings made in public, different trifles to their gods in the other temples. They never afterwards employed, for their particular use, the bagatelles which they offered to the idols, but they bought the incense which they burned with it. They neither combed nor washed themselves during these days; neither men nor women cleansed themselves. They did not do any servile or fatiguing work, for fear that some misfortune might befall them.

APPENDIX NO. 4.

Manera de las casas en Yucatan.[1]

Que la manera de hazer las casas era cubrirlas de paja que tienen muy buena y mucha, o con hojas de palma que es propia para esto y que tenian muy grandes corrientes para que no se llueuan, y que despues echan una pared por medio al largo que divide toda la casa, y que en esta pared dexan algunas puertas para la mitad que llaman las espaldas de la casa, donde tienen sus camas, y que la otra mitad blanquean de muy gentil encalado, y que los señores las tienen pintadas de muchas galanterias y que esta mitad es el recebimiento y aposento de los guespedes, y que esta pieça no tiene puerta, sino toda abierta conforme al largo de la casa, y baxa mucho la corriente delantera por temor de los soles y aguas, y dizen que tambien para enseñorearse de los enemigos de la parte de dentro en tiempo de necessitad. Y que el pueblo menudo hazia a su costa las casas de los señores, y que con

[1] Mode of building houses among the Yucatecs, Landa, sec. xx, p. 110.

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no tener mas puertas, tenian por grave delicto de hazer mal a casas agenas. Tenian una portezilla atras para el servicio necessario y que tienen unas camas de varillas, y en cima una serilla donde duermen, cubiertas de sus mantas de algodon: en verano duermen comunmente en los encalados con una de aquellas serillas, especialmente los hombres Allende de la casa hazian todo el pueblo a los señores sus sementeras, y se las beneficiavan y cogian en cantidad que le bastava a el y a su casa, y quando avia caças o pescas, o era tiempo de traer sal siempre davan parte al señor, por que estas cosas siempre las hazian de comunidad.

APPENDIX NO. 5.

Modo de bautismo en Yucatan.[1]

Tenian pues esta costumbre para venir a hazer los baptismos, que criavan las indias los niños hasta edad de tres años, y a los varoncillos usavanles siempre poner pegada a la cabeça en los cabellos de la coronilla una contezuela blanca, y a las muchachas traian ceñidas por las senes muy abaxo con un cordel delgado y en el una conchuela asida que les venia a dar encima de la parte honesto y destas dos cosas era entre ellos peccado y cosa muy fea quitarla de las mochachas antes del baptismo, el qual les davan siempre desde edad de tres años hasta doze y nunca se casavan antes del baptismo.

Quando alguno avia que quisiesse baptizar su hijo, iva al sacerdote y davale parte de su intento, el qual publicava por el pueblo el baptismo, y el dia en que lo hazia, el qual ellos miravan siempre no fuesse aciago.

Esto hecho el que haziá la fiesta que era el que movia la platica, elegia un principal del pueblo a su gusto para que le ayudasse a su negocio y las cosas del. Despues tenian de costumbre elegir a otros quatro hombres ancianos y honrados que ayudessen al sacerdote el dia de la fiesta a las cerimonias, y estos elegian juntamente a su gusto con el sacerdote. Y en estas elecciones entendian siempre los padres de todos los niños que avia que bap-

[1] Manner of baptism in Yucatan.—Landa, § xxvi, p. 144. Original.

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tizar, ca de todos era tambien la fiesta y llamavanlos a estos que escogian *chaces*. Tres dias antes de la fiesta ayunavan los padres de los mochachos y los officiales, abstiniendose de las mugeres.

El dia juntavanse todos en casa del que hazia la fiesta y llevavan los niños todos que avian de baptizar, a los quales ponian en el patio o placa de la casa, que limpio y sembrado de hojas frescas le tenian por orden en rengla los varones por si y las niñas por si, ponian les como padrinos una muger anciana a las niñas, y a los niños un hombre que los tuviessen a cargo.

Esto hecho tratava el sacerdote de la purificacion de la posada, hechando al demonio della. Para echarlo ponian quatro vanquillos en las quatro esquinas del patio en los quales se sentavan los quatro chaces con un cordel largo asido de uno a otro, de manera que quedavan los niños acorralados en medio a dentro del cordel, despues pasando sobre el cordel avian de entrar todos los padres de los niños que avian ayunado dentro del circuito. Despues o antes ponian en medio otro vanquillo donde el sacerdote se sentava con un brasero, y un poco de maiz molido y de su encienso. Alli venian los niños y niñas por orden y echavales el sacerdote un poco de maiz molido y del encienso en la mano, y ellos en el brasero; y ansi hazian todos, y estos saumerios acabados, tomavan el brasero en que los hazian, y el cordel con que los chaces los tenian cercados y echavan en un vaso un poco de vino y davan lo todo a un indio que lo llevasse fuera del pueblo, avisandole no beviesse ni mirass atras a la buelta y con esto dezian quedava el demonio echado.

El qual assi ido verrian el patio y limpiavanlo de las hojas del arbol que tenia que se dize cihom y echavan otras de otro que llaman *copo*, y ponian unas seras en tanto que el sacerdote se vestia. Vestido salia con un jaco de pluma colorado y labrado de otras plumas de colores, y que le cuelgan de los extremos otras plumas largas y una como coroza en la cabeça de las mesmas plumas, y debaxo del jaco muchos listones de algodon hasta el suelo como colas, y con un isopo en la mano de un palo corto muy labrado, y por barbas o pelos del isopo ciertas colas de unas culebras que son como caxcaveles, y con no mas ni menos gravedad que ternia un papa para coronar un emperador, que cosa era notable la serenidad que les causavan

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los aparejos. Los chaces ivan luego a los niños y ponian a todos sendos paños blancos en las cabeças que sus madres para aquello traian. Preguntavan a los que eran grandecillos si avian hecho algun peccado y tocamiento feo, y si lo avian hecho confessavanlo, y separavanlos de los otros.

Esto hecho mandava el sacerdote callar y sentar la gente, y començava el a bendezir con muchas oraciones a los mochachos, y a santiguarlos con su isopo, y con mucha serenidad. Acabada su bendicion se sentava y se levantava el principal que avian los padres de los mochachos elegido para esta fiesta, y con un guesso que el sacerdote le dava iva a los mochachos y amagava a cada uno por si nueve vezes con el guesso en que la frente; despues mojavale en un vaso de una agua llevava en la mano, y untavales la frente, y las faciones del rostro y entre los dedos de los piez y los de las manos a todos sin hablar palabra. Esta agua hazian de ciertas flores y de cacao mojado y desleido con agua virgen que ellos dezian traida de los concavos de los arboles o de los montes.

Acabada esta unctura se levantava el sacerdote y les quitava los paños blancos de la cabeça y otros que tenian colgados a las espaldas en que cada uno traia atadas unas pocas de plumas de un paxaro muy hermoso y algunos cacaos, lo qual todo recogia uno de los chaces, y luego el sacerdote les cortava a los niños con una navaja de piedra la cuenta que avian traido pegada en la cabeça; tras esto ivan los demas ayudantes del sacerdote con un manojo de flores y un humaço que los indios usan chupar; y amagavan con cada uno dellos nueve vezes a cada mochacho, y despues davanle a oler las flores y a chupar el humaço. Despues recogian los presents que las madres traian y davan dellos a cada mochacho un poco para comer alli, ca de comida eran los presentes, y tomavan un buen vaso de vino y presto en medio ofrecianlo a los dioses y con devotas plegarias les rogavan recibiessen aquel don pequeño de aquellos mochachos, y llamando otro oficial que les ayudava que llamavan *Cayom* davanse lo que lo beviesse, lo qual hazia sin descançar que diz que era peccado.

[Translation.]

Manner of baptism in Yucatan.[1]

This is the custom which they had for preparing them for baptism: The women were directed to raise the children to the age of three years,

[1] Sec. XXVI, page 145.

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putting on the head of the little boys something white, fastened among the locks at the back part of the head; as to the little girls, they wore hanging down from the girdle a very slender cord, to which a small shell was attached, which happened to be found placed exactly above the sexual parts. It was regarded as a great fault and a very wrong action to remove these things from the little girls before their baptism, which was always administered between three and twelve years, and they were never married before. When any one desired to have his child baptized, he went to the priest and communicated his intention to him; the priest published the baptism throughout the community, taking care always that the ceremony should not fall on an unlucky day. This done, he who had made the proposition, and who consequently took charge of the feast, chose at his fancy one of the chief men of the place, in order to aid him in all that had reference to it. After that it was the custom to choose still four others from among the oldest and most honorable, who assisted the priest in his duties on the day of the feast. This choice was always made with the consent of the priest himself. The fathers of all the infants to be baptized had an equal part in this election, for the feast was a resort for all. To those who had been chosen to accompany the priest they gave the title of *Chac*. During the three days preceding the ceremony the fathers of the children, as well as these officers, abstained from intercourse with their wives.

On the day designated all assembled at the house of him who gave the feast, bringing with them the children to be baptized. They ranged them in the court or a place in the house, which had been swept and ornamented with leaves; the boys placed themselves on one side, under the charge of a man who filled the office of godfather in regard to them; and on the other side the girls, to whom they appointed a matron to take care of them. When this was completed the priest busied himself with purifying the house, dispelling the evil spirit from the place. For this purpose they placed a small bench at the four corners of the court; the four *Chacs* seated themselves, stretching a cord from one to the other in such a manner that the children remained in some sort confined in the center, after which the fathers all together, who had observed the fast until this time, passed the cord to enter into the inclosure. In the center there was another bench, where the priest was seated, having beside a brazier with bruised maize and incense.

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The little boys and girls approached in order, and the priest placed in their hands some maize and incense, which they threw one by one into the brazier. This finished and the incensing being terminated, they raised the brazier and the cord with which the *Chacs* had formed the inclosure. They poured a little wine into a vase or vessel, which they gave, with these things, to a man to carry out of the village, and charged him especially not to drink the wine and not to look behind him on his return In this manner the evil spirit was said to be dispelled.

The yard was then swept and decorated with leaves which were found there, and were the leaves of a tree called *cihom;* they substituted them with others of a tree called *copo*, and stretched some mats, during which time the priest changed his clothes. He appeared soon after, clothed in a tunic of red feathers, worked with other feathers of different colors, and from which hung other feathers still finer; also, underneath, a large quantity of ribbons of cotton, which hung down to the ground. On his head he wore a kind of miter, embroidered with plumage in the same manner, and in his hand a small holy-water sprinkler of wood, carved skillfully, of which the filaments were of the tails of serpents, similar to serpents with rattles. He came out thus, having neither more nor less gravity than a pope would have in crowning an emperor; and it is a remarkable thing to see the serenity which all this apparel gave him.

The *Chacs* immediately advanced towards the children and placed white linen cloths, which their mothers had brought for this purpose, on their heads. They then asked the oldest if they had committed no wrong or immodest action; and if they had they confessed and were separated from the rest. This done, the priest commanded all to seat themselves and be silent; he then began to bless the children with certain prayers and to consecrate them with the holy water, with much dignity. The benediction finished, he sat down. The one chosen by the fathers of the infants to aid especially in this ceremony, then rose, and, armed with a bone, which the priest gave him, he went to each child and passed it in front of him nine times; he then dipped it in a vessel of water which he carried in his hand and anointed them on the forehead and face, also the interstices of the fingers and toes, without saying a single word. This water was composed of certain flowers and

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cacao soaked and diluted in the pure water which they said sprang from cavities in the woods or mountains.

After this anointing the priest rose; he took from their heads the white cloths which had been placed on them, also others which they had on their shoulders, where each one wore some feathers of a very beautiful bird and some grains of cacao. One of the *Chacs* collected these things, after which the priest cut off from the heads of the little boys that which they wore fastened on them with a stone knife. Behind the priest walked his other assistant, a bouquet of flowers in his hand, with a pipe with perfume, which the Indians were accustomed to smoke; they made nine passes with it before each child and then gave them one by one the flowers to smell and the pipe to smoke. They then collected the presents which the mothers had brought, and gave a little food to the children, the same amount to each infant, for these presents consisted of eatables. They took one large bowl filled with wine and hastily offered it to the gods, conjuring them with words of devotion to accept of this feeble homage on the part of the children; then calling another officer, whose title was *Cayom*, they gave him the vessel, which he must empty at a draught; for him to stop to take breath would have been wrong.

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